EWA
DEVELOPMENT PLAN

CITY AND COUNTY OF HONOLULU
PLANNING DEPARTMENT

August 1997

Office of the City Clerk
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EWA
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF EXHIBITS

APPENDIX A: CONCEPTUAL MAPS

1. EWA'S ROLE IN OAHU'S DEVELOPMENT PATTERN

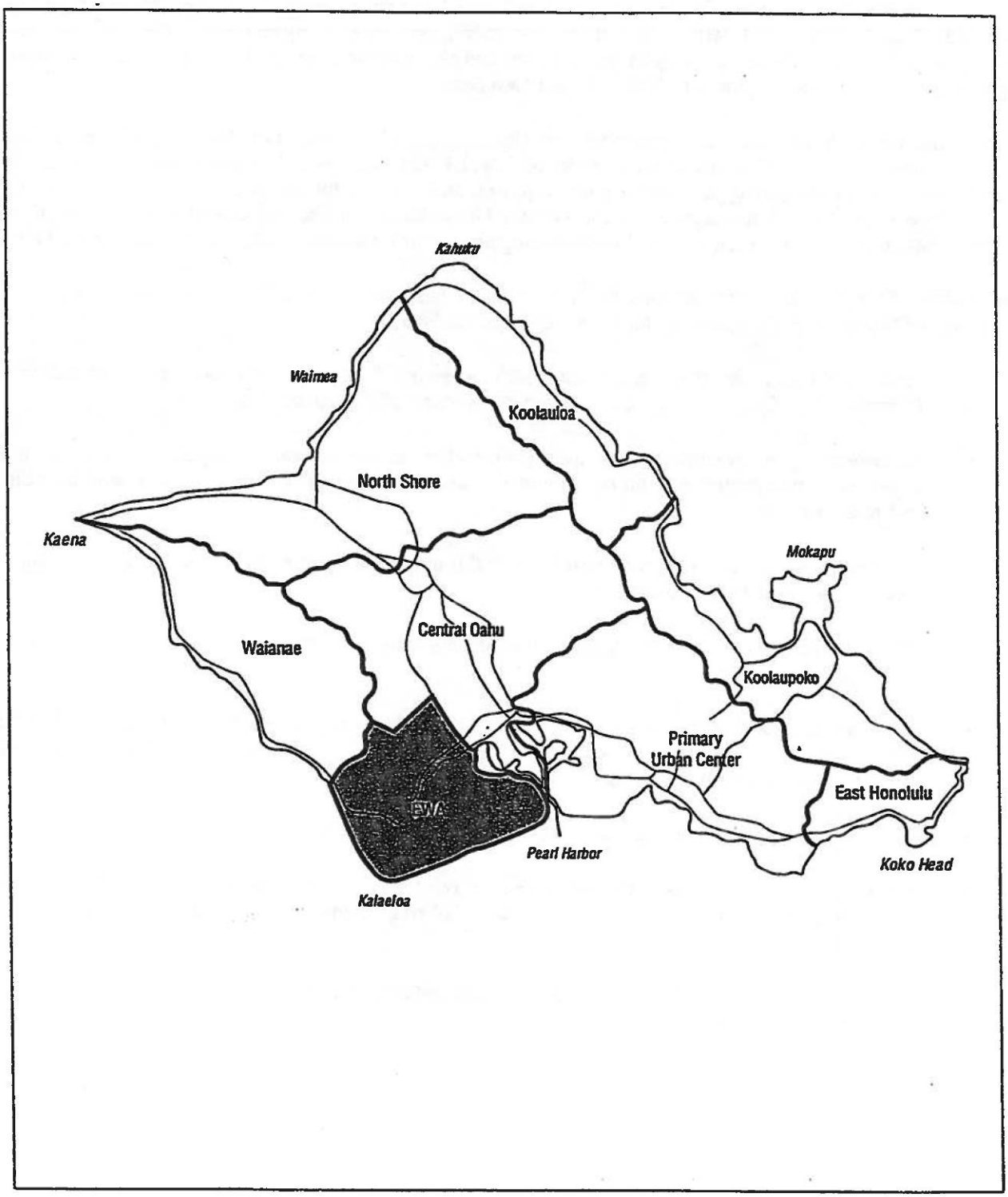
Ewa plays a key role in implementing the directed growth policies of the **General Plan of the City and County of Honolulu**. Campbell Industrial Park opened in the early 1960's, bringing industry and jobs to the Leeward Coast which previously had been predominantly a sugar economy and plantation lifestyle. In the 1970's, residential growth began in Ewa with the development of Makakilo and Ewa Beach.

In 1977, the Honolulu City Council approved a new **General Plan** which designated Ewa as the location for a secondary urban center for Oahu to be centered in the Kapolei area. The secondary urban center was to be the focus of major economic activity and housing development, and a center for government services. While the **General Plan** promotes full development of the Primary Urban Center, it also encourages development of the secondary urban center at Kapolei, and residential development of the urban fringe areas in Ewa and Central Oahu.

This update of the Ewa Development Plan reaffirms that role and amplifies how the role can be accomplished. In support of the **General Plan** policies, the Ewa Development Plan:

- Provides a secondary employment center with its nucleus in the City of Kapolei to supplement the Primary Urban Center (PUC) and to divert commuter traffic from the PUC;
- Concentrates primary employment activities at industrial and resort areas and at government service and higher education centers around the City of Kapolei so that secondary markets are created for office and retail activities;
- Provides for significant residential development throughout Ewa, consistent with the **General Plan** to meet the needs of Oahu's citizens;
- Provides for a variety of housing types from affordable units and starter homes to mid-size multi-family and single family units;
- Promotes diversified agriculture on prime agricultural lands along Kunia Road and surrounding the West Loch Naval Magazine in accordance with the **General Plan** policy to support agricultural diversification in all agricultural areas on Oahu;
- Provides a secondary resort area at West Beach (Ko Olina);
- Helps relieve urban development pressures on rural and urban fringe Development Plan Areas (Waianae, North Shore, Koolauloa, and Koolaupoko) so as to preserve the "country" lifestyle of these areas; and
- Provides, along with the PUC, a focus for directed and concentrated public and private infrastructure investment for growth.

Exhibit 1.1
Development Plan Areas for Oahu



2. THE VISION FOR EWA'S FUTURE

This chapter presents a statement of the vision for Ewa's future, discusses the key elements of the vision, and presents illustrative maps and tables.

2.1 VISION STATEMENT

This vision for Ewa has two horizons. The first is a 25 year horizon, extending from the present to the year 2020. This is the horizon that was used to project likely socio-economic change in Ewa and to assess the infrastructure and public facility needs that will have to be met over that period.

The Vision to 2020. By 2020, the Ewa Development Plan Area shown above in Exhibit 1.1 will have experienced tremendous growth, and will have made significant progress toward providing a Secondary Urban Center for Oahu. Population will have grown from 43,000 people in 1990 to almost 125,000. Nearly 28,000 new housing units will have been built in a series of master planned communities.

Job growth will be equally impressive, rising from 17,000 jobs to over 64,000 in 2020. Oahu residents and visitors will be attracted to Ewa by a new university campus, the Ko Olina resort, ocean and waterfront activities at Ewa Marina, a major super regional park, and a thriving City of Kapolei which has retail and commercial establishments and private and government offices.

Beyond 2020. In the course of the Development Plan revision, it became clear that there was value in looking beyond 2020 to identify what Ewa should look like when "fully" developed.

Such a perspective helped identify where open space should be preserved within the urbanized area, where the rapid transit corridor should be located, and where to set the limits to development in Ewa for the foreseeable future. As such, this second horizon might be called the "built-out" horizon and is probably 40 or 50 years in the future.

Creation of an Open Space Network

Urban growth will be contained within a boundary which will **protect prime agricultural lands** along Kunia Road and within the West Loch Naval Magazine Blast Zone for diversified agriculture. Preservation of prime agricultural lands above H-1 and on the Waianae side of Kunia Road for use in diversified agriculture will help retain open space and views, in addition to supporting economic diversification.

Within the Urban Growth Boundary, Ewa will be built around a regional system of **open space and greenways** so that Ewa has the feel of a network of communities "within a garden," as opposed to an unbroken suburban sprawl from Ko Olina to Ewa Beach.

Residents of these communities will enjoy **easy access to the ocean** through two major marinas, numerous beaches and a shoreline walkway from Ko Olina to Ewa Beach. Those interested in boating and ocean fishing will be able to use marina facilities and boat ramps at Ko Olina, Kalaeloa, and Ewa Marina.

Residents will be able to easily access beaches and swimming and surfing spots all along the entire Ewa coastline by road or a network of pedestrian paths and bikeways. Linear shoreline access will be provided along the coast from Ko Olina to Ewa Beach. At its center will be a major new regional park and recreation complex at Kalaeloa (on the former Barbers Point Naval Air Station) which will provide access to the ocean and beaches as well as offering significant active and passive recreation facilities.

A network of **greenways** will link the communities together, with landscaping along major roads such as Kapolei Parkway, North-South Road, and Fort Weaver Road, and pedestrian and bike paths along grassed drainageways and utility corridors.

Open space will be preserved in parks, golf courses, and agricultural areas which will also help to protect significant views. **Wildlife habitats** will be located at BPNAS, Ewa Marina, and West Loch.

Development of the Secondary Urban Center

A key component of the vision is the **Secondary Urban Center** which will provide a wide range of jobs located at visitor units and activity centers in Ko Olina and Ewa Marina, in heavy and light industrial areas near the Barbers Point Deep Draft Harbor, in offices and retail centers located at the City of Kapolei and community and neighborhood centers in residential communities, and in diversified agriculture activities located along Kunia Road and around the West Loch Naval Magazine.

At the heart of the Secondary Urban Center will be the **City of Kapolei** with an urban mix of commercial, office and residential uses. By 2020, it is projected that the City of Kapolei will house over 7,000 residents and provide work sites for 25,000 private jobs and 5,000 City and State jobs (located at the City's Civic Center). The City Center will become a regional commercial center, attracting customers from all parts of Oahu.

Many of the jobs in the City of Kapolei will be supported by development of the **University of Hawaii West Oahu campus** which is expected to have 7,600 students and 800 staff and faculty by 2020. Continued expansion of **industrial uses** at Campbell Industrial Park, Barbers Point Deep Draft Harbor, and Kapolei Business Park; and growth of the **Ko Olina Resort** and **Ewa Marina** to include over 3,700 visitor units by 2020 will also provide basic jobs which will support office and commercial jobs in the City of Kapolei.

Natural, Historic, and Cultural Resources

The Ewa Development Plan provides a vision for preservation, conservation, and enhancement of community resources.

Natural resources will be conserved through retaining natural drainageways, protecting valuable plant and wildlife habitats, and by conserving potable water through development of a non-potable water system for irrigation and industrial use and re-use of sewage effluent.

Cultural and historical resources will be preserved by retaining visual landmarks and significant views, and by preserving significant historic, cultural, and archaeological features from Ewa's past.

Building Communities

Growth in Ewa will mean **community building**, not just project development. Substantial residential growth (almost 28,000 new units by 2020) will occur primarily in master planned communities including the City of Kapolei, East Kapolei, Ewa by Gentry, Ewa Marina, Ewa Villages, Ko Olina, Laulani, Makaiwa Hills, Makakilo, and the Villages of Kapolei.

The master plans and design of new developments must demonstrate how they would create **communities which interact with and support the vision** for development of the entire Ewa region.

These communities must be designed to meet the needs of a wide range of families and age groups. **Ample housing** should be provided for families needing affordable units and starter homes as well as for those seeking large multi-family and single family units. **Housing for persons of all ages** will be needed, including students going to school

at the UH - West Oahu campus, young families seeking their first home, and senior citizens wanting a retirement home close to their grandchildren.

Separate identities should be created for existing and planned communities by utilizing concepts such as open space, architectural design concepts, streetscape treatments and landscaping which also is linked to the regional open space and greenway network.

Communities Designed to Reduce Automobile Usage

Ewa will be developed with a transportation system which provides easy access to transit, uses traffic calming design, and encourages people to walk and bike, reducing the need for use of the automobile.

High density housing and commercial development will be built along a **rapid transit corridor** extending from the City of Kapolei to Waipahu. The high density residential and commercial uses centered at nodes along the corridor will support efficient use of buses and other forms of mass transit along the corridor, allowing some residents to minimize automobile use.

Sufficient land will be reserved in the corridor so that an at-grade separated rapid transit system could be developed on the corridor at some point in the future. (An at-grade separated system would **not** be elevated and would have its own exclusive right-of-way.)

Adequate Infrastructure to Meet the Needs of New and Existing Development

Public agencies and private developers will work together to create adequate infrastructure to meet the needs of the residential and working population of the area. Current deficiencies in roads, schools, and parks will be addressed, and new developments will not be approved until availability of key infrastructure needs can be guaranteed. Public-private mechanisms for financing infrastructure will be developed to support concurrent development of infrastructure.

Public agencies' planning for infrastructure needs will be guided by where the Development Plan indicates residential and commercial development should occur first. See the discussion of Phasing in Section 2.2.10.

2.2 KEY ELEMENTS OF THE VISION

The vision for Ewa's future will be implemented through the following key plan elements:

- The Urban Growth Boundary,
- Retention of Prime Agricultural Lands,
- The Network of Open Space and Greenways,
- A continuous Shoreline Park along the Ewa coastline,
- A major Regional Park and Recreation Complex at Kalaeloa (at the former Barbers Point Naval Air Station),
- The Secondary Urban Center,
- A Network of Master Planned Residential Communities, including a Revitalized Ewa Villages,

- Communities designed to support non-automotive travel,
- A Rapid Transit Corridor,
- Conservation of Natural Resources,
- Preservation and Enhancement of Cultural Resources, and
- Phased Development to Ensure Adequate Infrastructure.

Each of these elements is discussed below.

2.2.1 URBAN GROWTH BOUNDARY

The Urban Growth Boundary for Ewa was drawn to give long-range protection from urbanization for over 3,000 acres of prime agricultural land and for preservation of open space while providing adequate land for urban development in Ewa for the foreseeable future. The Urban Growth Boundary for Ewa is illustrated in Exhibit 2.1, shown in greater detail on the four conceptual maps in Appendix A, and is described below.

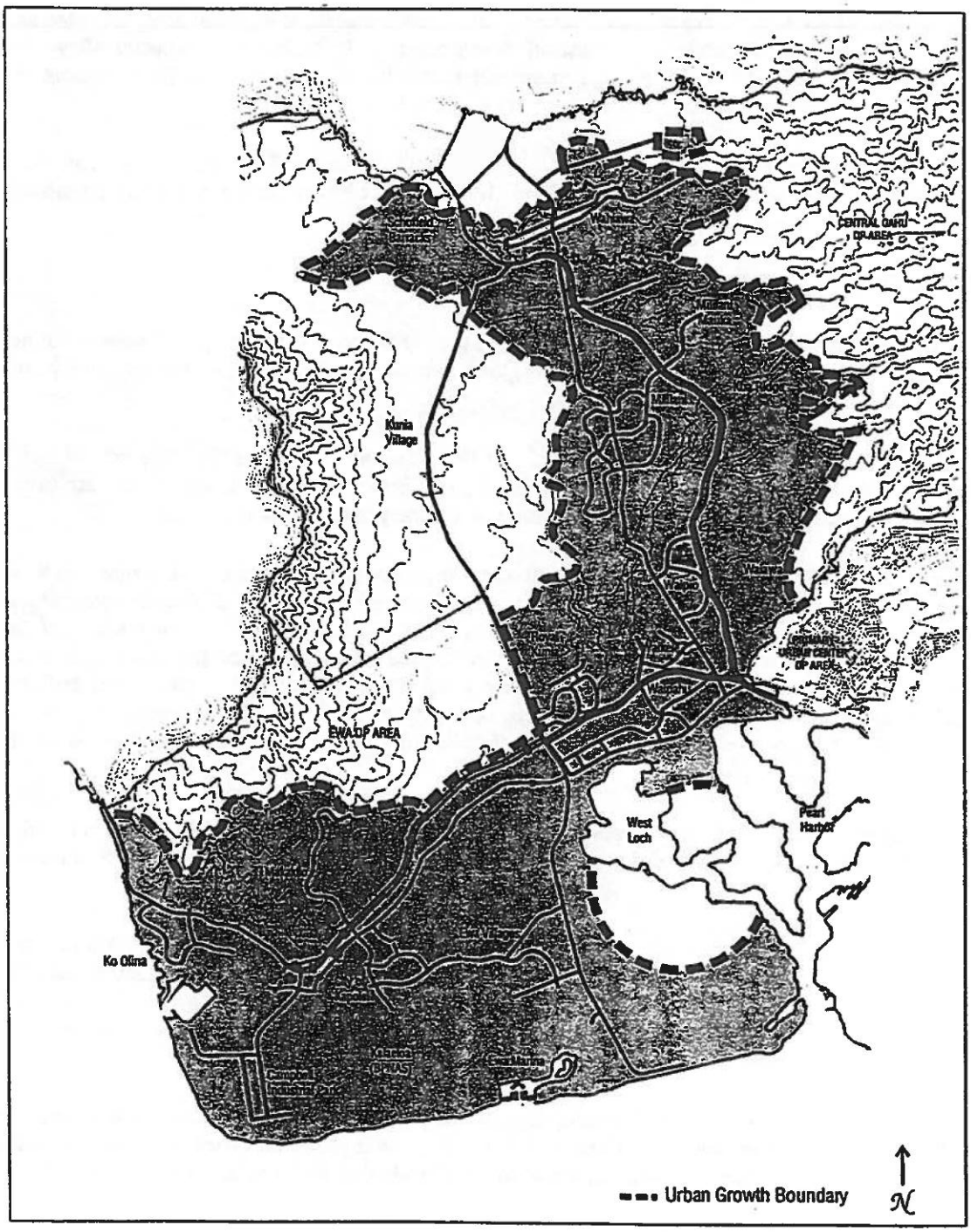
Boundary Description. The mauka portion of the boundary follows the Shoreline Management Area boundary around Kahe Point, runs along the northern boundary of the proposed Makaiwa Hills Phase II project and the existing Makakilo development, and then follows the proposed extension of Makakilo Drive to the H-1 Freeway. It then follows the H-1 Freeway to the intersection with Kunia Road and then up Kunia Road to the boundary between the Central Oahu Development Plan and Ewa Development Plan Areas.

The makai portion of the boundary encloses the blast zone for the West Loch Naval Magazine.

Protection for Prime Agricultural Land. The Urban Growth Boundary protects prime agricultural lands along Kunia Road from urban development for the foreseeable future, providing an incentive for landowners to give long-term leases to farmers. No proposals for urban uses will be considered outside the Urban Growth Boundary.

Open Space Network. Within the Urban Growth Boundary, significant acreage will be retained in open space in parks, wildlife habitats, golf courses, and natural and grass-lined drainageways. (Of the estimated 23,000 acres within the Urban Growth Boundary, over 6,000 acres or 27 percent of the acreage will be in open space.)

Exhibit 2.1
Urban Growth Boundary



Capacity for Growth. Even with the amount of land reserved for agriculture, parks, and open space, there is ample capacity within the Urban Growth Boundary for residential, commercial, and industrial development extending beyond the 25-year horizon (2020).

As shown in Table 2.2, almost 8,400 acres are available for residential development; almost 800 acres for retail and office development; and nearly 1,250 acres for industrial development. Providing this capacity allows for competition and promotes more affordable residential, commercial, and industrial development. Development will be approved in phases to match the provision of infrastructure.

It should be noted that a portion of the lands indicated for development are in the State Agriculture Land Use District, and will have to be approved for transfer to the State Urban District by the State Land Use Commission before they can be developed.

2.2.2 RETENTION OF AGRICULTURAL LANDS

The closure of the Oahu Sugar Company in 1995 raised serious questions about how thousands of acres of former sugar lands in Ewa should be used in the future. The Ewa Development Plan protects the highest value prime agricultural lands in Ewa from urban development.

These high value lands are located in two areas: lands mauka of H-1 Freeway and on the Waianae side of Kunia Road, and lands in the Blast Zone of the West Loch Naval Magazine. State agencies indicated that these prime agricultural lands should have the highest priority for retention of all the prime agricultural lands in Ewa.

These 3,000 acres have been rated, in the most authoritative studies, as potentially among the most productive lands for diversified agriculture in the State. The State Department of Agriculture's November 1977 study, **Agricultural Lands of Importance to the State of Hawaii (Revised)**, indicates that the Kunia lands and a portion of the Magazine lands are "prime" agricultural lands which generally produce the largest yields and the best quality crops for the least expenditure of energy. The University of Hawaii Land Study Bureau's December 1972 bulletin, **Detailed Land Classification - Island of Oahu**, rated productive capacity of the Kunia lands as either A or B and the Magazine lands as B or C (An A rating was given to the highest productivity lands and E was given to the lowest.)

These prime agricultural lands have unique advantages in weather, soil productivity, infrastructure, water availability from the Waiahole Ditch, and access to the local markets of Honolulu and to export markets through Honolulu International Airport.

Successful agricultural operations are currently being pursued on the former sugar lands in the Kunia area, including vegetables, melons, and other truck crops. In addition, the Hawaiian Sugar Planters' Association research facility at the corner of H-1 and Kunia Road is conducting studies on vegetable crops and forage to help diversified agricultural activities in the area. The Navy plans to request proposals for agricultural activities on its lands surrounding the Naval Magazine in the near future.

By protecting agricultural lands from urban development, an opportunity is created for retention and development of diversified agriculture on small farms and agricultural parks. Public-private partnerships will be needed to solve problems of lease terms and tenure, access to capital, research, and marketing if this vision is to be realized.

2.2.3 OPEN SPACE AND GREENWAYS

A network of Open Space and Greenways will link the Secondary Urban Center and associated employment centers, new master planned residential developments and revitalized established communities, an Ewa shoreline park, and a major regional park and recreation complex at Kalaeloa (on the former Barbers Point Naval Air Station). See the Open Space Map in Appendix A.

Table 2.1 lists the major components of the Ewa Open Space and Greenways Network.

TABLE 2.1: EWA OPEN SPACE AND GREENWAYS NETWORK

Mountain and Agricultural Areas
- Waianae Mountains Conservation District
  - (Including the Nature Conservancy's Honouliuli Preserve)
- Pu'u Makakilo
- Pu'u Palailai
- Agricultural Lands Mauka of H-1 and Waianae side of Kunia Road
- Agricultural Lands in the West Loch Naval Magazine Blast Zone

Natural Gulches and Drainageways
- Honouliuli Stream
- Kaloi Gulch
- Makalapa Gulch
- Makakilo Gulch
- Awanui Gulch
- Palailai Gulch
- Makaiwa Gulch
- Keoneoio Gulch
- Limaloa Gulch

Shoreline Areas
- Ewa Shoreline Park (Lateral Public Access/Easement from Ko Olina to Pearl Harbor)
- Wetlands and Wildlife Habitats
  - Honouliuli National Wildlife Refuge
  - Apokaa Ponds
  - Batis Salt Marsh at Ewa Marina
- Kahe Point Beach Park
- Tracks Beach Park
- Ko Olina Beach Parks (2 planned)
- Barbers Point Beach Park
- Oneula Beach Park
- Ewa Beach Park
- Iroquois Point Park (military)
- West Loch Shoreline Park

Continued on next page

TABLE 2.1: EWA OPEN SPACE AND GREENWAYS NETWORK
(Continued)

Regional and District Parks

Ewa Marina District Park
Kalaeloa Regional Park (proposed for Barbers Point Naval Air Station)
Ewa Makahiko District Park (planned expansion)
East Kapolei District Park (planned)
Kapolei Regional Park
Pu'u Palailai Regional Park (planned)
Makaiwa District Park (planned)

Golf Courses

Ko Olina (one existing, one planned)
Makaiwa Hills (planned)
Makakilo (planned)
Kapolei
Ewa Villages
Ewa Gentry (planned)
Barbers Point (military)
Ewa Marina (planned)
Hawaii Prince
Puuloa
West Loch

Greenway Corridors

Farrington Highway
Kapolei Parkway
Historic OR&L Railway/Bikeway Corridor
North-South Road
Fort Weaver Road

The Open Space and Greenways Network:

- connects existing and planned communities through a system of linear greenbelts, consisting of drainage, transportation, and utility corridors,

- creates separate identities for existing and planned communities through use of landscape buffers, golf courses, wildlife preserves, agricultural lands, regional parks, and other large open spaces at the urban edges.

An important new element in the Ewa Open Space and Greenways Network will be an **Ewa Shoreline Park** that will stretch along the Ewa coastline from Pearl Harbor to Ko Olina. It will be anchored by a major **Regional Park and Recreation Complex** planned at Kalaeloa (at the former Barbers Point Naval Air Station).

2.2.4 KALAELOA REGIONAL PARK AND RECREATION COMPLEX AND OTHER SPORTS COMPLEXES

A major Regional Park and Recreation Complex at Kalaeloa will provide needed open space, recreational opportunities, and access to the beaches and ocean.

The Kalaeloa Center is envisioned as a major nucleus of community and economic activity, attracting visitors from all of Oahu. To be developed on surplus lands at Barbers Point Naval Air Station, it will feature a regional park and commercial sports and recreation facilities. Taking advantage of its extensive land resources, cultural sites, and spectacular ocean setting, it will offer extensive community-oriented recreation facilities, commercial recreation enterprises, and public facilities. Ocean recreation areas at Kalaeloa will feature coastal lands providing a setting for ocean sports, beach activities, picnicking and family camping.

Future development of the area should also include a sports recreation complex and possible replacement facility for the Aloha Stadium. A sports recreation complex should be developed to sustain and support a professional and semi-professional baseball team and baseball fields for use by the community. In addition, a new sports facility to replace Aloha Stadium should be identified through a community based planning process, in conjunction with the major landowners in the area. Both facilities should meet the necessary infrastructure needs for the area.

2.2.5 SECONDARY URBAN CENTER

The Secondary Urban Center will provide a wide range of employment opportunities by 2020 and consist of:

- A major office, retail, and residential center at the City of Kapolei (projected to have over 25,000 jobs by 2020),

- A Secondary Civic Center with main headquarters for some State and City agencies (projected to have over 5,000 jobs),

- A major resort destination area at Ko Olina (projected to have 2,700 hotel units and 600 resort condo units of the 4,000 visitor units permitted),

- A deep draft harbor and major industrial center at Campbell Industrial Park/Barbers Point (projected to have over 7,000 jobs),

- Civilian reuse of Barbers Point Naval Air Station compatible with the rest of Ewa (projected to have almost 6,000 jobs), and

- The University of Hawaii West Oahu (projected to have 800 faculty and staff and 7,600 students).

See the Ewa Urban Land Use Map in Appendix A.

An **Enterprise Zone** could be used in the area in order to promote and support job development by offering businesses tax incentives to develop within a zone.

2.2.6 MASTER PLANNED RESIDENTIAL COMMUNITIES

A network of master planned residential communities will provide a wide variety of housing and accommodate the need for affordable housing. Master plans will guide new developments in the City of Kapolei, East Kapolei, Ewa by Gentry, Ewa Marina, Ko Olina, Laulani, Makaiwa Hills, and the Villages of Kapolei and the rehabilitation of existing structures and development of new housing in Ewa Villages. (See Exhibit 2.2 for locations.)

These master plans will incorporate planning principles and guidelines to preserve historic and cultural values, establish open space and greenway networks, and create well-designed, livable communities.

2.2.7 COMMUNITIES DESIGNED TO SUPPORT NON-AUTOMOTIVE TRAVEL

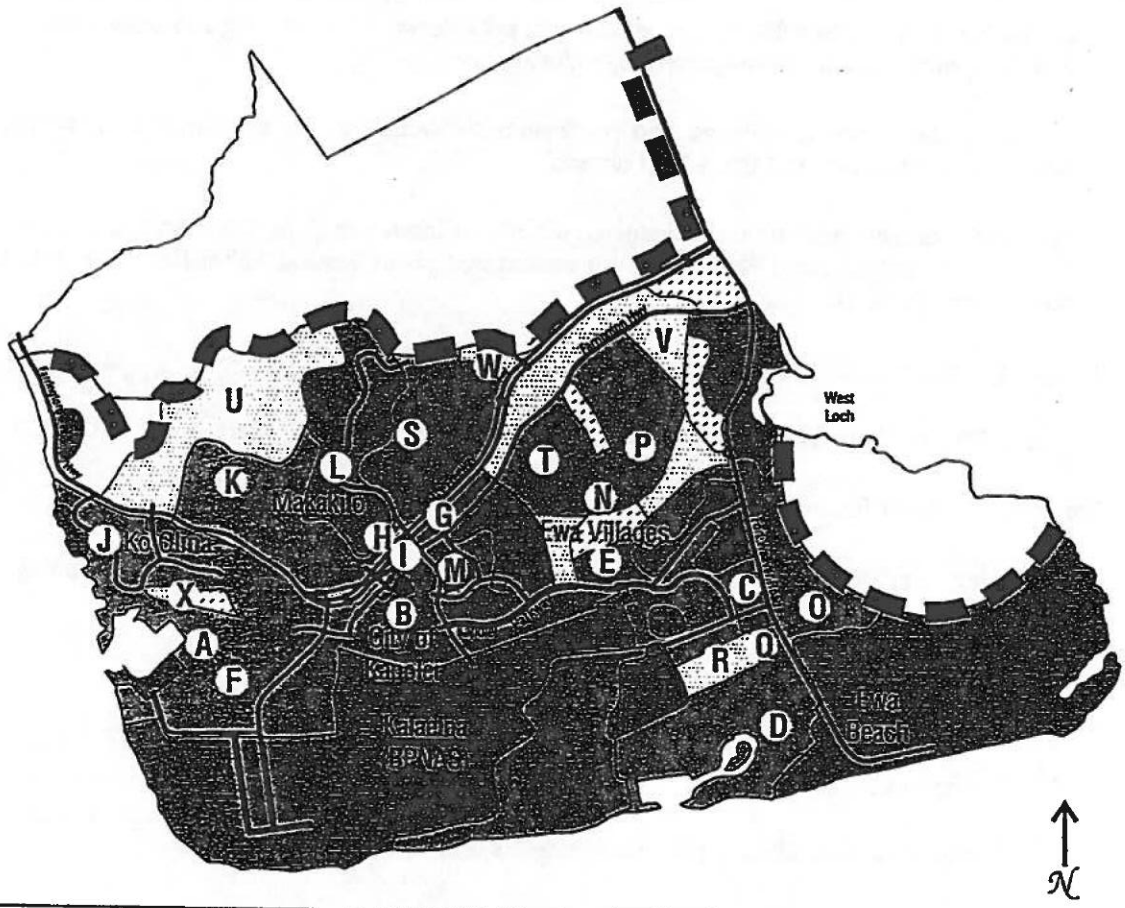
The master planned residential communities will be designed or redeveloped to support **pedestrian and bike use** within the community and **transit use** for trips outside of the community.

A **Rapid Transit Corridor** will link the City of Kapolei, the Villages of Kapolei, the UH West Oahu campus, and Waipahu. High density residential development will be built along the corridor within walking distance of the major nodes and transit stops.

High density residential and commercial development will be developed at six **transit nodes** whose general locations are indicated on the Public Facilities Map in Appendix A. Transit nodes are meant to be located at activity focal points which would serve as natural points for transferring from one transportation mode to another.

Through 2020, it is projected that transit service along the corridor will be provided by mass transit bus service running on roadways shared with other vehicles. However, sufficient right-of-way shall be reserved for the establishment, when needed in the future, of a separated at-grade rapid transit system. Such a system will require a 28-foot right-of-way along the route and a 75-foot right-of-way at transit station sites (at the transit nodes).

Exhibit 2.2
Existing and New Master Planned Communities



LEGEND

Phase I (1995-2005)

Previously Approved
- A Barbers Point Harbor
- B City of Kapolei
- C Ewa by Gentry
- D Ewa Marina
- E Ewa Villages
- F Kapolei Business Park
- G Kapolei Knolls
- H Kapolei Mauka
- I Kapolei Shopping Center
- J Ko Olina
- K Makaiwa Hills
- L Makakilo
- M Villages of Kapolei

Proposed
- N DHHL
- O Fairways Residential
- P East Kapolei (Schuler)
- Q Laulani Commercial
- R Laulani Residential
- S Makakilo Extension
- T HFDC (State Land Bank)

Phase II (2006-2015)
- U Makaiwa Hills
- V Kapolei East (Campbell)
- W Kapolei North
- X Kapolei LDA
- P East Kapolei (Schuler)
- T HFDC State Land Bank
- R Laulani Residential

Phase III (2016 and Beyond)
- T HFDC (State Land Bank)
- V Kapolei East (Campbell)
- X Kapolei LDA

- Non-Urban Areas
- Existing Urban Areas
- Urban Expansion 1995-2005
- Urban Expansion 2006-2015
- Urban Expansion 2016 and Beyond
- Urban Growth Boundary

2.2.8 CONSERVATION OF NATURAL RESOURCES

Ewa Natural Resources, including potable water, coastal water quality, and wetlands and other wildlife habitat, will be conserved by:

- Developing a dual water distribution system with potable water for drinking and other clean water uses and non-potable water for irrigation and industrial use;
- Designing the regional drainage and wastewater treatment system to minimize non-point source pollution of the ocean and Pearl Harbor; and
- Protecting valuable habitats for endangered waterbirds located in Batis Salt Marsh at Ewa Marina and in the West Loch of Pearl Harbor and for endangered plants located within Barbers Point Naval Air Station and elsewhere.

See Exhibit 3.2 in Chapter 3 for a mapping of key natural resources.

2.2.9 PRESERVATION AND ENHANCEMENT OF HISTORIC AND CULTURAL RESOURCES

Ewa's Historic and Cultural Resources will be preserved and enhanced by:

- Preserving significant historic features from the plantation era and earlier periods, including:
  - [] The Ewa Villages and other remnants of the plantation era,
  - [] The OR&L right-of-way,
  - [] Lanikuhonua, and
  - [] Native Hawaiian cultural and archaeological sites; and by
- Retaining visual landmarks and significant vistas, including:
  - [] Distant vistas of the shoreline from the H-1 Freeway above the Ewa Plain,
  - [] Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Waianae Development Plan Area,
  - [] Views of the Waianae Range from H-1 Freeway between Kunia Road and Kaloi Gulch and from Kunia Road,
  - [] Views of na pu'u at Kapolei, Palailai, and Makakilo,
  - [] Mauka and makai views, and
  - [] Views of central Honolulu and Diamond Head.

2.2.10 PHASED DEVELOPMENT

Phased development of Ewa will support the City of Kapolei's development and conserve scarce infrastructure dollars. It shall be characterized by:

- **Increased land supply** to support economic development and job creation and to accommodate major residential growth with an emphasis on providing affordable housing and a diversity of housing types;
- **Moderate growth of commercial centers in Urban Fringe Areas** to primarily serve the needs of the surrounding residential communities;
- **Phasing of Residential and Commercial development** to support development of the Secondary Urban Center. See the Ewa Phasing Map in Appendix A and Table 2.2 below;
- **Adequate Facilities Requirements** as a condition for zoning approval to ensure that development does not outpace infrastructure development; and
- **Coordinated Public-Private Infrastructure and Project Development** that supports the directed growth strategy of the General Plan. Examples of project development include construction of the State and City offices in the Kapolei Civic Center, and development of the University of Hawaii West Oahu Campus.

Table 2.2 shows the approximate land area and number of housing units of projects shown on the Land Use Map and Phasing Map in Appendix A. The projects are categorized by the time period or Phase in which they can apply for a zoning change.

It is important to emphasize that these projects are **not** necessarily expected to be completed within the phase in which they are listed. It is expected that housing development activities at many projects would continue for ten years or more after the initial zoning approval, and that over half of the projected housing supply would be provided after 2005.

The table shows the projected number of housing units and the approximate gross acreage by land use category for previously approved and proposed projects. These represent general indicators of the land areas involved and possible densities. In determining actual land uses and densities, project planning and design and review of project zoning change applications should be directed by the planning principles and guidelines provided in Chapters 3 and 4.

TABLE 2.2: PHASING OF EWA DEVELOPMENT[1]

Project Area	Housing Units	Land Area (Gross Acres) Resid.	Resort	Comm.	Ind.	Total
Phase I (1997—2005)[2]						
Previously Approved						
Barbers Point Harbor					114	114
City of Kapolei	2,000	118		370		488
Ewa by Gentry	5,387	554			13	567
Ewa Marina	4,850	500	40	82	38	660
Ewa Villages	1,760	182				182
Kapolei Business Park					1,020	1,020
Kapolei Knolls	418	72				72
Kapolei Mauka	750	50		14		64
Kapolei Shopping Center				55		55
Ko'Olina	8,700	354	85	100		539
Makaiwa Hills	1,066	354		30		384
Makakilo	2,706	808		7		815
Villages of Kapolei	4,020	283		36		319
TOTAL	**31,657**	**3,275**	**125**	**694**	**1,185**	**5,279**
Proposed Projects						
DHHL	1,600	200				200
East Kapolei (Schuler)	4,000	350		10		350
Fairways Residential	900	100				100
HFDC (State Land Bank)	4,000	750				750
Laulani Commercial				20	30[5]	50
Laulani Residential	1,100	150				150
Makakilo Extension	200	100				100
CUMULATIVE TOTAL	**43,400**	**4,900**	**130**	**720**	**1,220**	**7,000**
Phase II (2006—2015)[3]						
East Kapolei (Schuler)	4,000	350		10		350
HFDC (State Land Bank)	3,700	300		20[6]		350
Kapolei East (Campbell)	2,000	500		50		550
Kapolei LDA	500	50				50
Kapolei North	1,200	150				150
Makaiwa Hills	2,000	1,300				1,300
CUMULATIVE TOTAL	**56,700**	**7,550**	**130**	**800**	**1,220**	**9,700**
Phase III (2016 and beyond)[4]						
Kapolei East (Campbell)	6,300	300				300
Kapolei LDA	1,300	50				50
CUMULATIVE TOTAL	**64,300**	**7,950**	**130**	**800**	**1,220**	**10,050**

Notes:

(1) For proposed projects in all phases, housing units are rounded to the nearest 100; residential and total acreage to the nearest 50; all other acreage to the nearest 10. Parts may not sum to totals shown due to rounding.

(2) Lands included in the first phase of development (1997—2005) would be eligible for processing zoning changes and other development applications starting with adoption of the Plan.

For previously approved projects, acreages shown refer to the entire project area (including areas already built) whereas housing units exclude units built before July 1994.

(3) Lands in the second phase of development (2006—2015) would be eligible for processing zoning changes and other development applications far enough in advance so that housing construction could begin in 2006.

(4) Lands in the third phase of development (2016 and beyond) would be eligible for processing zoning changes and other development applications far enough in advance so that housing construction could begin in 2016.

(5) Intended for service-oriented light industrial use rather than heavy industrial.

(6) Intended for neighborhood commercial use rather than office commercial.

3. LAND USE POLICIES, PRINCIPLES, AND GUIDELINES

The vision for development of Ewa described in the preceding chapter will be implemented through application of land use general policies, principles, and guidelines.

3.1 OPEN SPACE PRESERVATION AND DEVELOPMENT

3.1.1 GENERAL POLICIES

Open space will be used to:

- Provide long-range protection for diversified agriculture on lands outside the Urban Growth Boundary,
- Protect scenic views and provide recreation,
- Define the boundaries of communities,
- Provide a fire safety buffer where developed areas border "wildlands" either in preservation areas within the Urban Growth Boundary or in the State Conservation District, and
- Create linkages between communities through a network of Greenways along transportation and utility corridors and drainageways.

3.1.2 PLANNING PRINCIPLES

The general policies listed above provide the basis for the following planning principles:

- **Visual and Physical Definition of Urban Areas.** The large expanses of open space beyond the Urban Growth Boundary should provide the basic definition of the regional urban pattern. Within the Urban Growth Boundary, the open space system should visually distinguish and physically separate individual communities, neighborhoods, and land use areas in Ewa.
- **Passive and Active Open Spaces.** The open space system shall consist of areas in active use, as well as passive areas. Active areas include parks, golf courses and agricultural fields. Passive areas include the State Conservation District, fallow land in the State Agriculture District, drainage and utility corridors. Shoreline areas may be either active or passive.

- **Creation of Open Space Network.** The various types of open space should be linked as an open space network, with major open space areas connected by open space corridors along transportation routes, utility corridors, and drainageways.

- **Dual Use of Drainageways and Utility Corridors.** To create the regional open space network, drainageways and utility corridors should be viewed as opportunities to link major open spaces with pedestrian and bike paths along open space corridors. To accommodate such uses, where possible, drainageways should be retained as natural or man-made vegetated channels rather than be replaced by concrete channels.

- **Accessibility of Recreational Open Space.** Public parks and most golf courses will be accessible for recreation use, but the open space system should also promote the accessibility of shoreline and mountain areas (as required by City Ordinance).

3.1.3 RELATION TO OPEN SPACE MAP

The following areas shown on the Open Space Map in Appendix A are components of the regional open space system:

Mountain and Agricultural Areas. These are the areas outside of the Urban Growth Boundary, including areas within the State Conservation District.

Natural Gulches and Drainageways. Gulches in the hillside areas within the Urban Growth Boundary are indicated for preservation, as well as the Kaloi Gulch drainage channel.

Shoreline Areas. The proposed lateral public easement/access along the shoreline is indicated by a dotted line. Nearshore, coastal-dependent uses and features such as beach parks and wetlands are indicated as parks and preservation areas, respectively.

Parks. Only island-wide, regional and district parks are shown. Community and neighborhood parks are part of the open space system, but they are generally too small to display on a regional map and their location is determined more by community facility design considerations (see Section 3.3 below) than by their relationship to the regional open space network.

Golf Courses. All golf courses are shown, whether public or private, since their visual contribution to the open space system is the same.

Greenways or Open Space Corridors. These corridors are indicated on the map following certain public right-of-ways which are extensive enough to make a significant contribution to the regional open space network as a linear connector.

3.1.4 GUIDELINES

The following guidelines carry out the general policies and planning principles for regional open space elements:

3.1.4.1 Mountain Areas

- A public campground and hiking trails should be acquired and maintained in the area mauka of the Urban Growth Boundary on the slopes of the Waianae Range.

- Public access, including vehicular access from Makakilo Drive to trail heads and public campgrounds, should be acquired and maintained.

- Dedication of vehicular access to trail heads and public campgrounds from a collector street in the Makaiwa Hills area should be required when that area is developed.

- At higher elevations, in the State Conservation District, the forest should be maintained. Utility corridors and other uses should avoid disturbance to areas with high concentrations of native species.

- Endangered species habitats and other important ecological zones should be identified and protected from threats such as fire, weeds, feral animals and human activity.

3.1.4.2 Natural Gulches and Drainageways

- The natural gulches on the slopes of the Waianae Range foothills within the Urban Growth Boundary should be preserved as part of the open space system.

- Planned improvements to the Ewa drainage systems should be integrated into the regional open space network by emphasizing the use of retention basins and recreational access in the design approach. (See Chapter 4, Section 4.6 below.)

3.1.4.3 Shoreline Areas

- Public pedestrian access to the shoreline should be provided at intervals of approximately one-quarter mile, except where access is restricted by the military for security reasons.

- Where a lateral public easement along the shoreline is available or planned, the distance between access points may be increased. However, the intervals should generally not exceed one mile and vehicular parking spaces and limited facilities for waste disposal and potable water supply should be available at the access points.

- Nearshore wetlands and mangroves should be maintained and enhanced, where necessary, as wildlife habitats.

- Private and public landowners should coordinate efforts to create continuous shoreline easements to ensure the maximum feasible degree of lateral public access.

- Lateral shoreline access along the Ewa Marina coastline and a pathway providing continuous public access around the Ewa Marina waterway should be provided.

- At a minimum, a 60 foot setback should be provided along the shoreline, and should, where possible, be expanded to 150 feet.

3.1.4.4 Agricultural Areas

- Facilities necessary to support intensive cultivation of arable agricultural lands should be permitted.

- Facilities to support limited outdoor recreation use, such as camping, horseback riding and hiking, should be permitted in areas where agricultural use is not feasible.

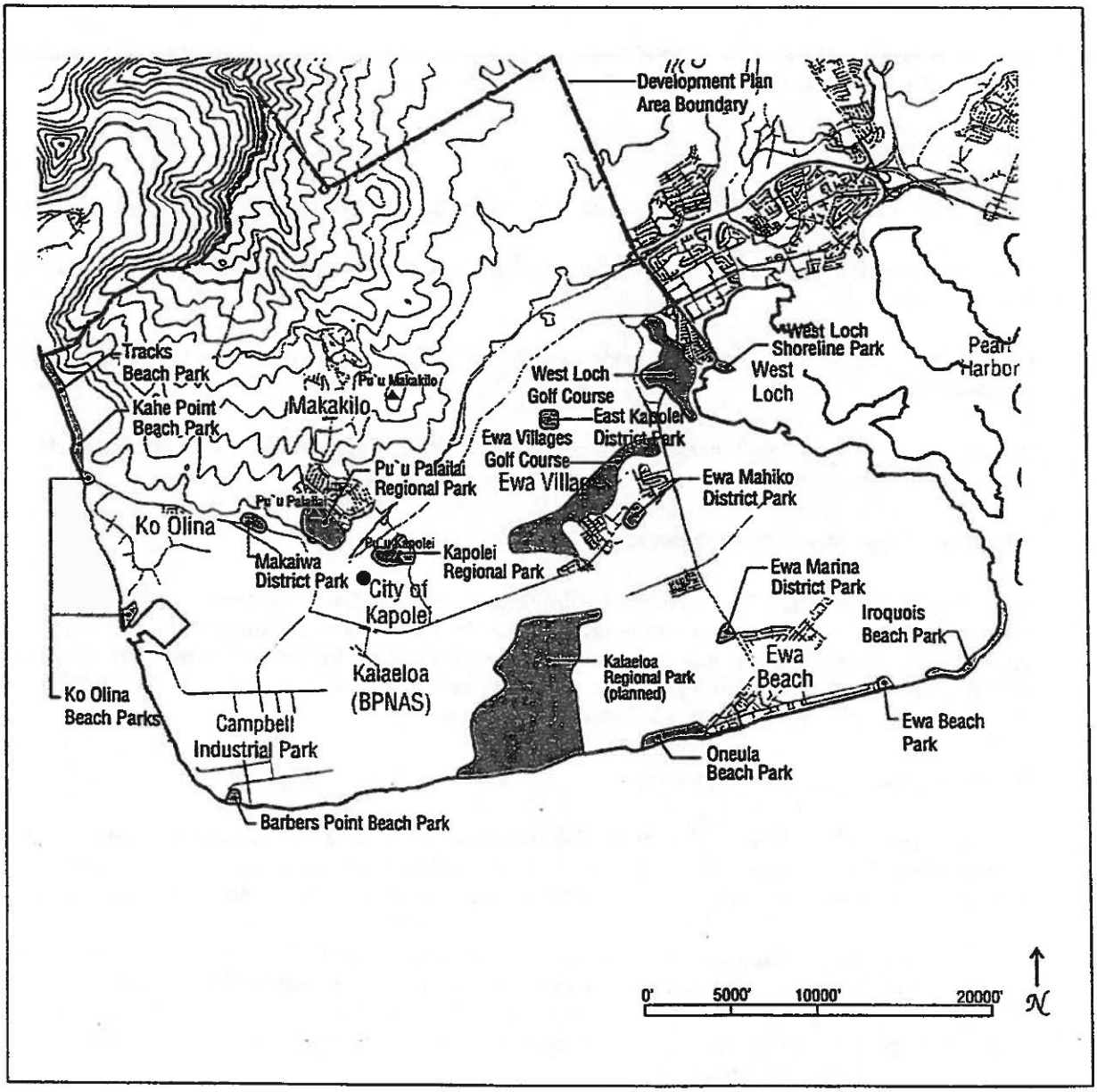
- Residential use should be permitted only to the extent that it is accessory to the agricultural use. Where several dwellings are planned as part of an agricultural use, they should be sited and clustered to avoid the use of more productive agricultural lands and to reduce infrastructure costs.

- Buildings and other facilities that are accessory to an agricultural operation should be designed and located to minimize impact on nearby urban areas and arterial roads and major collector streets.

3.1.4.5 Parks

- There shall be a major park at Kalaeloa (within what is presently Barbers Point Naval Air Station) that provides beach-oriented recreation and support facilities near the shoreline and active recreation facilities in mauka areas, and preserves wildlife habitats such as wetlands and endangered plant colonies. (See Exhibit 3.1: Map of Parks in the Ewa Development Plan Area below.)

Exhibit 3.1
Map of Parks in the Ewa Development Plan Area



- Other beach and shoreline parks should be located throughout the Ewa coastline. Planned beach parks include one at either end of the Ko Olina shoreline. Oneula Beach Park will be expanded by 9.4 acres as part of the Ewa Marina project.

- Sites for regional parks at Pu'u Kapolei and Pu'u Palailai include prominent landforms that should be maintained as a natural visual feature and regional landmark.

3.1.4.6 Golf Courses

- Golf courses should be located and designed to optimize their function as drainage retention areas.

- Safe public access should be provided through golf courses, as necessary, for regional pedestrian and bicycle routes.

- Golf courses should be designed to provide view amenities for adjacent urban areas, including public rights-of-way.

- When screening is necessary for safety reasons, landscape treatment, setbacks and modifications to the course layout should be used rather than fencing or solid barriers.

3.1.4.7 Wildland - Urban Fire Hazard Setbacks

- As determined appropriate by the Honolulu Fire Department, residential or commercial developments which are adjacent either to preservation areas within the Urban Growth Boundary or to lands within the State Conservation District may be required to provide a setback to reduce the risk of fire spreading from the "wildlands" to the developed area. Typically, such a setback would be 20 to 30 feet wide and should be landscaped with low growth, low-burn plantings.

3.1.4.8 Greenways and Open Space Corridors

- Sufficient easement width should be provided for the major trunk lines and transmission lines for utility systems, when their alignment is not within a road right-of-way, to permit the growth of landscaping within the easement, consistent with all applicable operations, maintenance, and safety requirements.

- When overhead transmission lines are located within or adjacent to a road right-of-way, there should be sufficient width to permit the growth of landscaping adjacent to the transmission line, consistent with all applicable operations, maintenance, and safety requirements. The purpose of the landscaping is to divert attention from the overhead lines and, preferably, obscure views of the overhead lines from the travelway and adjacent residential areas.

- The use of utility easements for pedestrian and bicycle routes should be permitted, consistent with all applicable operations, maintenance, and safety requirements.

- The rights-of-way for major arterials and major collector streets should be designed as landscaped parkways or greenways, complete with a landscaped median strip, landscaped sidewalk, and bikeways. Major arterials should have separate bike paths, and major collectors should have bike lanes. Suggested width for major arterials, including right-of-way and planting strips, is 120 feet wide and for major collectors is 100 feet wide.

3.2 REGIONAL PARKS AND RECREATION COMPLEXES

The following section presents general policies, planning principles, and guidelines for development of regional parks and recreation complexes.

3.2.1 GENERAL POLICIES

Regional parks and recreation complexes include the Kalaeloa Regional Park and Recreation Complex proposed for Barbers Point Naval Air Station, Kapolei Regional Park, Pu'u Palailai Park, various beach and shoreline parks, and public and private golf courses. To sustain economic development, the City is encouraged to look towards public-private partnerships to build, and maintain new park and recreation complexes.

Regional Parks. The new Kalaeloa Regional Park at the present Barbers Point Naval Air Station will feature a large shoreline park with beach recreation and support facilities; a wide range of activity areas including athletic fields in the mauka lands; and preserves for wildlife habitats, wetlands and endangered plant colonies. The Park will encompass mostly undeveloped lands, bordered by the shoreline on the south, the airfield and developed portions of the facility to the north and west, and the existing military golf course and future Ewa Marina golf course to the east. Key elements of the Park are as follows:

- The Park will include and preserve two wetland areas and an endangered plant preserve that have been recommended for preservation by the U.S. Fish and Wildlife Service.
- Proposed uses for the mauka areas include a Hawaiian cultural park, continuation of the existing riding stable, cabin and tent camping, archery, and various other passive and active recreation uses. The site could also accommodate a baseball complex.
- The Park will also provide access to a continuous shoreline easement extending from the Ewa Marina development to Ko Olina.

Kapolei Regional Park is a 73 acre park which includes the Pu'u o Kapolei. The Park will serve as a defining limit for the northeastern edge of the City of Kapolei and as a visual gateway to the City. The park will provide diverse active and passive recreation within easy walking distance of both the City Center and the Villages of Kapolei.

Pu'u Palailai Park will be located below Makakilo, and is to be a nature park. It will offer hikers excellent views of the Ewa Plain and distant views of Honolulu and Diamond Head.

Existing beach and shoreline parks are located at Tracks, Kahe Point, Barbers Point, One'ula, Ewa Beach, and West Loch.

Two future beach parks are planned at both ends of Ko Olina. The larger park at the northern end of the resort will provide for picnicking and other passive recreation. A park at the southern end will provide direct access to one of the four swimming lagoons. A boat launching ramp, which will be available for public use, will be located adjacent to the southern park, and will provide access to the marina channel.

Golf Courses. Ewa has seven public and private golf courses, and there are plans for five more. The City's courses include the West Loch and Ewa Villages golf courses. The Ewa Village course which will open in the spring of 1996 also provides flood protection and storm water detention for Ewa Villages.

Private golf courses include the Hawaii Prince, Puuloa, Kapolei, and Ko Olina golf courses. The U.S. military operates a golf course at Barbers Point Naval Air Station, (BPNAS) and will continue to do so after BPNAS is

returned to civilian control. The Ewa-Gentry golf course is scheduled to begin construction in 1997, and additional golf courses are planned for Ko Olina Resort, Makakilo, and Ewa Marina.

Golf courses can provide protection for open space, and help reduce flooding and non-point pollution by helping retain storm waters. Golf course development should be approved only after determination that the course meets social, growth, economic, and environmental guidelines and approval of a community integration program.

Recreation Complexes. Sports and recreation complexes designed to attract visitors from throughout the region and the rest of Oahu have been proposed for a number of areas in Ewa. Proposals for a Kalaeloa Center on surplus lands at Barbers Point Naval Air Station call for creation of an "Olympic Village" type international training center, a baseball training facility, a rowing water course, a motorsports center, and a water theme park. Such complexes should be designed to be compatible with surrounding land uses and environmental features.

3.2.2 PLANNING PRINCIPLES

The general policies for regional parks and recreation complexes are supported by the following planning principles:

- **Appropriate Scale and Siting.** Architectural elements and siting should be used to heighten the visibility of a major recreation events area as it is approached from principal travel corridors.

- **Environmental Compatibility.** Uses that generate high noise levels should be located and operated in a way that keeps noise to an acceptable level in existing and planned residential areas. The built environment should avoid adverse impacts on natural resources or processes in the coastal zone or any other environmentally sensitive area. To retain a sense of place, the design of recreation areas should incorporate natural features of the site and use landscape materials that are indigenous to the area where feasible.

- **Community Integration.** The design of recreational attractions may have a distinct identity and entry, but there should be elements that link these destinations with surrounding areas through the use of connecting roadways, bikeways, walkways, landscape features or architectural design.

3.2.3 GUIDELINES

The following guidelines implement the general policies and planning principles for regional parks and recreation complexes listed above.

3.2.3.1 Islandwide and Regional Parks

- A major park will be developed within what is presently Barbers Point Naval Air Station that provides beach-oriented recreation and support facilities near the shoreline, other active recreation facilities in mauka areas, and preserves for wildlife habitats such as wetlands and endangered plant colonies.

- Facilities for tent and cabin camping should be provided within the new park at Barbers Point Naval Air Station in the major recreational area that includes a beach park.

- Other beach and shoreline parks should be located throughout the Ewa coastline. Planned beach parks include one at either end of the Ko Olina shoreline. One'ula Beach Park will be expanded as part of the Ewa Marina project.

- Sites for regional parks at Pu'u Kapolei and Pu'u Palailai include prominent landforms that should be maintained as a natural visual feature and regional landmark. (See the Parks Map, Exhibit 3.1 above.)

3.2.3.2 Sports and Recreation Complexes

Definition of Use Areas

- Uses that attract a high number of people for events should be separated as much as possible from residential areas and wildlife habitats.
- Parking areas for sporting events should provide amenities and service facilities to accommodate "tailgate" picnics, as well as nearby picnic tables and outdoor grills.

Transportation Facilities

- Bus loading areas and shelters and bicycle parking facilities should be located as close as possible to entry gates for special events areas.
- Bus stops should be located at all principal activity areas.

Views

- Facilities for special events should be located and designed to be readily visible and identifiable from the principal transportation corridors that lead to them.
- The visual identity of the complex should be established through distinctive architecture, landscaping, or natural setting.

Landscape Treatment

- The visibility of perimeter fencing, parking lots and garages and other utilitarian elements should be minimized through plantings or other appropriate visual screens along roadway frontages.
- In large parking lots, canopy trees should be used to provide shade. Special paving or pavement markings could be used to indicate pedestrian routes to destinations and differentiate sections of the parking area.

Natural Environment

- Wetland and other wildlife habitat areas shall be retained, protected, and incorporated as passive recreational resources.

3.2.3.3 Siting

- Island-wide and regional parks and golf courses are shown on the Open Space Map and the Public Facilities Maps in Appendix A.
- Change in the location of an island-wide park or a golf course shall require a City review and approval process, such as the Plan Review Use process, which provides adequate public notice and input, complete technical analysis of the project, and approval by the City Council. Approval of changes in size and configuration may be done administratively.
- Funding for new park facilities shall be committed according to the priority for development of the area surrounding the park location, as indicated on the Phasing Map in Appendix A.

- Regional sports and recreation complexes may be located on the Barbers Point Naval Air Station after it is returned to civilian use, on the fringes of the City of Kapolei, and in areas designated for commercial or park use, subject to a City review and approval process, such as the Plan Review Use process, which provides public review, complete analysis, and approval from the Department of Planning and Permitting and the City Council.

3.3 COMMUNITY-BASED PARKS

The following section provides general policies and guidelines for community-based parks and recreation areas.

3.3.1 GENERAL POLICIES

Adequate parks to meet residents' recreational needs should be provided. Currently, Ewa has less community-based park acreage than the Department of Parks and Recreation island-wide standard indicates is needed for its existing population. The existing deficit relative to the standard is almost 40 acres.

New residential development should strive to provide land for open space and recreation purposes at a minimum of two acres of park per 1,000 residents. Community-based parks (and associated service radius) include mini-parks (1/4 mile), neighborhood parks (1/2 mile), community parks (one mile), and district parks (two miles).

Based on these standards, an additional 76 acres of community-based parks and recreation areas should be developed to meet the needs of the projected 2020 Ewa population.

Access to recreational resources in the mountains, at the shoreline, and in the ocean should be protected and expanded. Trails to and through natural areas of the gulches and mountains are an important public recreational asset. Some areas are difficult to access because of landowner restrictions. New development projects are an opportunity to provide public access to trail heads from the streets extending toward the mountain slopes or approaching the edges of the gulches. In addition, the City should support other efforts to expand access to mountain and gulch trails in areas where urban development will not occur.

3.3.2 GUIDELINES

The following guidelines implement the general policies for community-based parks:

3.3.2.1 Development of Community-Based Parks

- The Department of Parks and Recreation should co-locate Neighborhood or Community Parks with elementary or intermediate schools and coordinate design of facilities when efficiencies in development and use of athletic, recreation, meeting, and parking facilities can be achieved.

- The Department of Parks and Recreation should coordinate the development and use of athletic facilities such as swimming pools and gymnasiums with the State Department of Education (DOE) where such an arrangement would maximize use and reduce duplication of function.

- Where feasible, the Department of Parks and Recreation should site Community and Neighborhood Parks at the center of neighborhoods, in order to maximize accessibility.

- Development master plans should provide accessible pathways from surrounding streets to facilitate pedestrian and bicycle access to all features in parks.

3.3.2.2 Access to Mountain Trails

- Access to mountain trails in the Palehua Ridge area should be provided as part of the Makaiwa Hills project.

3.3.2.3 Siting

- Conceptual locations for district parks are shown on the Open Space Map in Appendix A. These locations may be revised without needing to amend the Development Plan as more detailed site information and planning analysis is available.

- Community and neighborhood parks are part of the open space system, but their location is determined more by community facility design considerations than by their relationship to the regional open space network. Siting of Community and Neighborhood Parks should be reviewed and decided at the time the Project Master Plan is submitted, prior to the granting of a zone change.

- Funding for new park facilities should be committed according to the priority for development of the area surrounding the park location, as indicated on the Phasing Map in Appendix A.

3.4 HISTORIC AND CULTURAL RESOURCES

This section provides policies, planning principles and guidelines for the preservation and development of historic and cultural resources in Ewa.

3.4.1 GENERAL POLICIES

Physical references to Ewa's history and cultural roots should be emphasized to help define Ewa's unique sense of place. Existing visual landmarks should be protected, and creation of new culturally appropriate landmarks should be supported.

Significant historic features from the plantation era and earlier periods should be preserved.

Whenever possible, significant vistas should be retained.

Exhibit 3.2 indicates the locations of a number of these historic and cultural resources which are also listed below in Table 3.1.

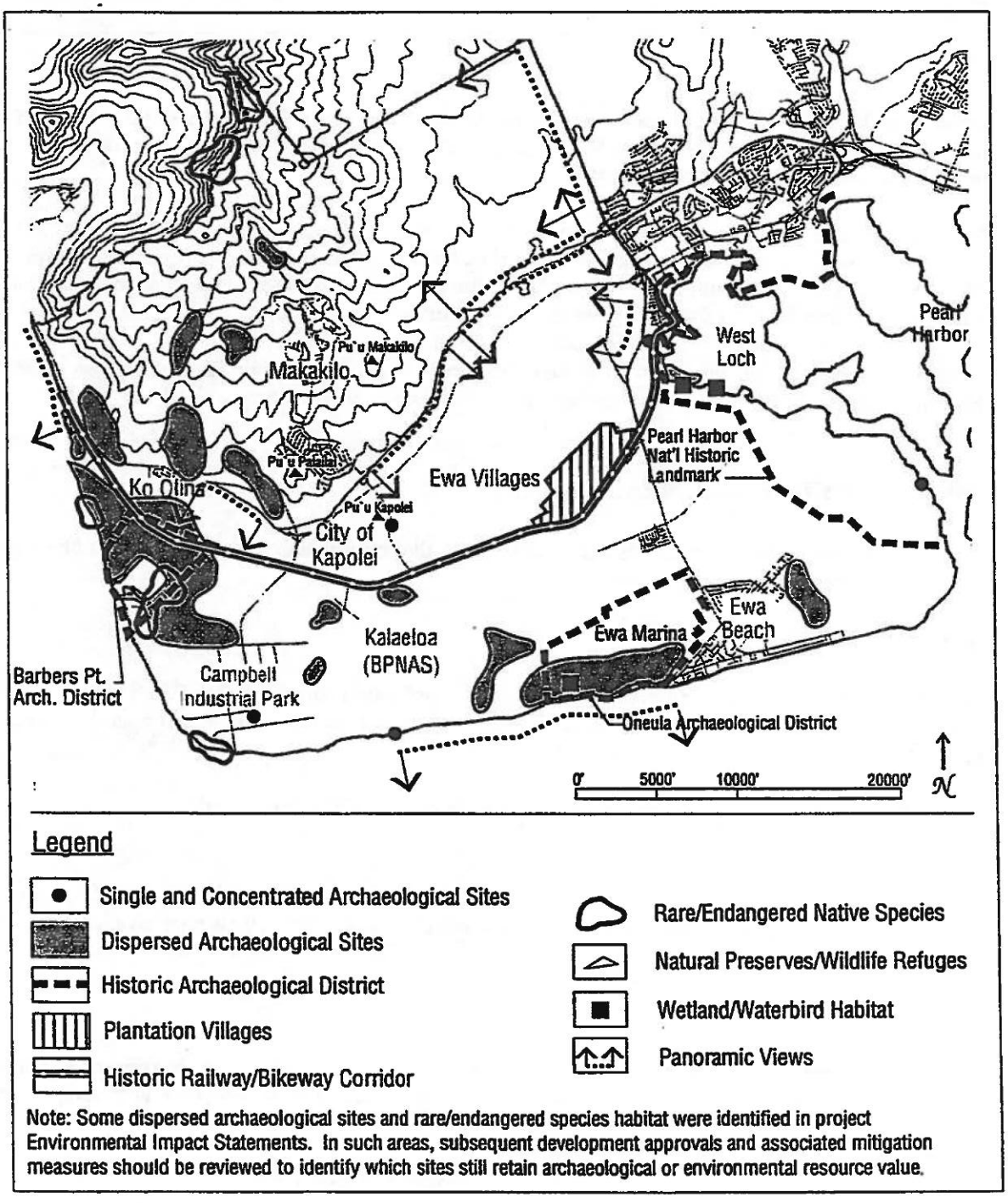
3.4.2 PLANNING PRINCIPLES

Ewa contains several different types of historic and cultural sites which are representative of its history and valuable as historic records and cultural references. The treatment of a particular site should vary according to its characteristics and potential value.

The following planning principles should be used to determine appropriate treatment:

- **Preservation and Protection.** Some historic, cultural, or archaeological sites have high preservation value because of their good condition or unique features. Such sites are recommended for in situ preservation and appropriate protection measures.

Exhibit 3.2
Map of Natural, Historic and Scenic Resources in the Ewa Development Plan Area



Note: Some dispersed archaeological sites and rare/endangered species habitat were identified in project Environmental Impact Statements. In such areas, subsequent development approvals and associated mitigation measures should be reviewed to identify which sites still retain archaeological or environmental resource value.

TABLE 3.1: SIGNIFICANT EWA HISTORIC AND CULTURAL RESOURCES

HISTORIC FEATURES

Lanikuhonua
OR&L Historic Railway
Ewa Villages
Pearl Harbor National Historic Landmark

NATIVE HAWAIIAN CULTURAL AND ARCHAEOLOGICAL SITES

Barbers Point Archaeological District
Oneula Archaeological District

SIGNIFICANT VIEWS AND VISTAS

- Distant vistas of the shoreline from the H-1 Freeway above the Ewa Plain;
- Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Waianae Development Plan Area;
- Views of the Waianae Range from H-1 Freeway between Kunia Road and Kaloi Gulch and from Kunia Road;
- Views of na pu'u at Kapolei, Palailai, and Makakilo;
- Mauka and makai views; and
- Views of central Honolulu and Diamond Head.

- **Adaptive Reuse.** Many historic sites can be converted from their original intended use to serve a new function without destroying the historic value of the site, perhaps even enhancing its interpretative value. In other cases, such as sites with sacred significance, the site should be either restored or remain intact out of respect for its inherent value.

- **Compatible Setting.** The context of an historic site is usually a significant part of its value. Care should be taken in the planning and design of adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity and historic or cultural value of the site. The appropriate treatment should be determined by the particular qualities of the site and its relationship to its physical surroundings.

- **Accessibility.** Public access to an historic site can take many forms, from direct physical contact and use to limited visual contact. The degree of access should be determined by what would best promote the preservation of the historic, cultural and educational value of the site, recognizing that economic use is sometimes the only feasible way to preserve a site. In some cases, however, it may be highly advisable to restrict access to protect the physical integrity or sacred value of the site.

- **Public Views.** Public views include views along streets and highways, mauka-makai view corridors, panoramic and significant landmark views from public places, views of natural features, heritage resources, and other landmarks, and view corridors between significant landmarks. The design and siting of all structures should reflect the need to maintain and enhance available views of significant landmarks. Whenever possible, overhead utility lines and poles that significantly obstruct public views should be relocated or placed underground.

3.4.3 GUIDELINES

The following guidelines for historic and cultural resources implement the general policies and planning principles listed above:

3.4.3.1 OR&L Historic Railway

Method of Preservation

- The existing track should be maintained or repaired to the extent feasible in order to permit its use for historic theme rides.

- Preferably, the route would extend from Ko Olina to Waipahu. If this is not feasible, preservation efforts should focus on restoring the historic rail link between Ewa Villages and Waipahu, with a terminus at the Waipahu Cultural Garden.

Adaptive Reuse

- Use of the railroad for historic theme rides should be encouraged.

- There should also be a parallel paved bikeway along the length of the rail route, either within or adjacent to the right-of-way. The bikeway should be provided even in those sections where the railroad itself is not operational.

Adjacent Uses

- New development should be set back a minimum of 50 feet on either side of the OR&L right-of-way, unless it is directly related to the operation of the railroad, or is consistent with the use of the right-of-way for open space and bikeway purposes in stretches where railroad operation is not feasible, or is otherwise specified in existing land use approvals.

- Landscaping should be provided along the adjacent bikeway, with occasional rest stops with seating and other amenities.

- Railroad station platforms, maintenance and equipment buildings, kiosks and other accessory structures with a period architectural theme, as well as parking and loading areas should be permitted in the railroad right-of-way and setback area.

Public Access

- Public use should be encouraged by continuing and expanding the operation of historic railroad theme rides and by providing a parallel bikeway.

- Interpretative signs along the route should explain the historic significance of the railroad and note points of interest.

3.4.3.2 Lanikuhonua

Method of Preservation

- The appearance of the house and grounds should be maintained as closely as possible to its present condition.

- The landscaped character of the grounds and their physical and visual relationship to the shoreline environment should be maintained.

- The sense of place should be perpetuated by using the site for Hawaiian cultural events.

Adaptive Reuse

- Use of the site should focus on the landscaped grounds as a location for outdoor events, particularly those with a Hawaiian cultural theme.

- Commercial use of the site should be occasional rather than intensive, and events should be limited to low-key entertainment.

Architectural Character

- Modifications to the existing structures should respect the architectural style of the original dwelling and be limited to repairs, rehabilitation or minor expansions.

- Coconut palms should be the dominant tree on the grounds, with other complementary coastal vegetation, preferably native species such as hala and ilima.

- The visual relationship between the grounds and the shoreline, particularly the natural cove, should be maintained.

Adjacent Uses

- A dense growth of landscaping should visually separate Lanikuhonua from the surrounding Ko Olina resort to maintain the quiet ambiance and appearance of a remote tropical retreat.
- The visual identity of Lanikuhonua as a unique site apart from Ko Olina should be maintained by the dense growth of tall palm trees.
- Public access along the shoreline fronting Lanikuhonua should be provided, but not in as formal a manner as Ko Olina.

Public Access

- Lanikuhonua should be maintained as a private facility with limited public access for scheduled community and cultural events and private parties.

3.4.3.3. Native Hawaiian Cultural and Archaeological Sites

Method of Preservation

- Preservation in situ should be required only for those features which the State Historic Preservation Officer has recommended such treatment.
- The preservation method, ranging from restoration to "as is" condition, should be determined on a site-by-site basis, in consultation with the State Historic Preservation Officer.

Adjacent Uses

- Appropriate delineation of site boundaries and setbacks and restrictions for adjacent uses should be determined on a site-by-site basis in consultation with the State Historic Preservation Officer.
- Criteria for adjacent use restrictions should include sight lines that are significant to the original purpose and value of the site.

Public Access

- The appropriateness of public access should be determined on a site-by-site basis in consultation with the State Historic Preservation Officer, Hawaiian cultural organizations and the owner of the land on which the site is located.

3.5 CITY OF KAPOLEI

This section describes the general policies, planning principles, and guidelines which are to be applied to development of the City of Kapolei.

The former Ewa Development Plan included specific development objectives, principles, and standards to guide development approvals for the City of Kapolei.

This revised Ewa Development Plan incorporates key policies, planning principles, and guidelines for the City of Kapolei from the former Development Plan, as well as from the **City of Kapolei Urban Design Plan** approved by the City Council by resolution in 1995, and the Unilateral Agreement adopted as part of the zoning ordinance in 1990. Under the Unilateral Agreement, any proposed revisions or updates to the **Urban Design Plan** are to be submitted to the City Council for its review and approval every two years. (The **Urban Design Plan** applies only to Campbell Estate's properties covered by the Unilateral Agreement.)

3.5.1 GENERAL POLICIES

The City of Kapolei should serve as the urban core, or the "downtown" for the Secondary Urban Center. It should accommodate a major share of the new employment in the Secondary Urban Center.

The City of Kapolei should have a balanced mix of business and residential areas, complemented by the recreational, social and cultural activities of a city. Mixed use should be permitted and encouraged throughout most of the City area, in order to achieve the diversity and intensity of uses that characterize a city.

The City of Kapolei is envisioned to be a true city, encompassing a full range of urban land uses, and laid out in small blocks connected by a grid system of public streets. Exhibit 3.3 illustrates the street pattern and the planned land uses by district.

3.5.1.1 Districts

The City should be composed of six different districts which should accommodate the full array of business, commercial, residential, cultural and public uses that characterize a city center. The six districts are described below:

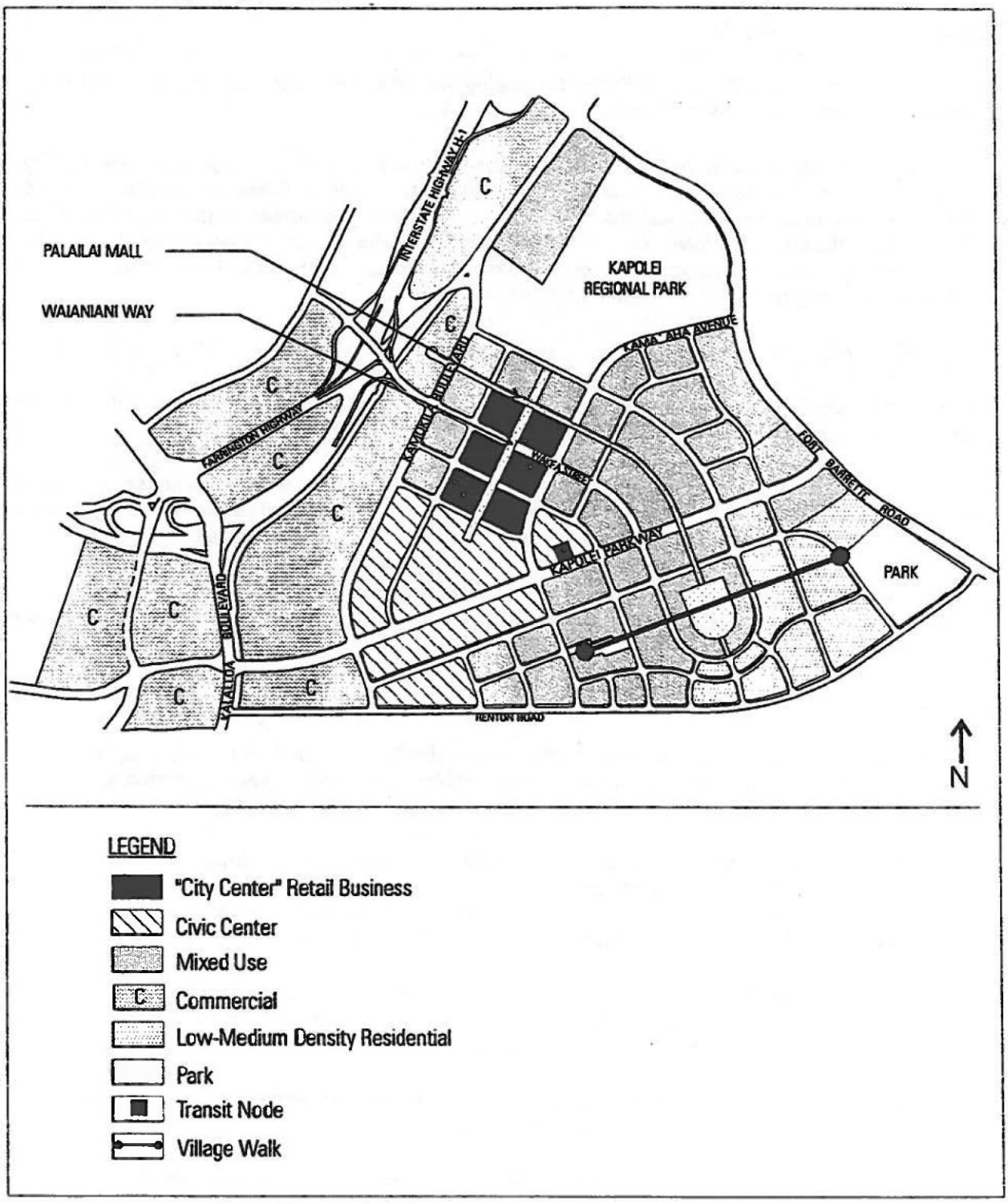
- The **City Center** should be the high density core of the city. Larger office towers should be the predominant form of development in this district, with shopping and restaurants at ground level. The inclusion of apartments within some of the towers should also be encouraged to establish a more dynamic mix of uses and help to maintain an active urban environment in the area.

- The **Commercial District** should accommodate commercial uses which require a large lot area for all related activities and convenient off-street parking, with most if not all spaces located at ground level. Building spaces should generally cover a relatively small portion of the lot (e.g., 25 percent or less).

  Examples of possible uses include shopping centers, power centers, theaters, auto dealerships, discount retail outlets, furniture stores, and home improvement centers.

- The **Civic Center** should feature City and State offices in an urban park setting where people and activities are highlighted. The Center should be much like a university campus in the heart of a city, with a balance between built forms and usable landscaped spaces, and between active and passive uses.

Exhibit 3.3
City of Kapolei Land Use Map



- The **Mixed Use Districts** should be of medium density, with buildings limited to six floors. Commercial development should be emphasized in the area adjoining City Center and along Kapolei Parkway, while residential use should be emphasized makai of Kapolei Regional Park and near Fort Barrette Road.

  - In the commercial emphasis mixed use areas, retail development (shopping, restaurants, services, etc.) should be encouraged to locate along the street front, with required parking located behind the building or above the ground floor. Offices may also be located on the ground floor, as well as on upper floors. Housing, when provided, should be located above the ground floor.

  - In residential emphasis mixed use areas, the primary use should be multi-family dwellings. Commercial uses to meet the shopping and service needs of the neighborhood's residents should be encouraged to locate at ground level.

- The **Village Center District** should be the local shopping district for residents living in the Residential District makai of the Kapolei Parkway, as well as people living and working in the Mixed Use District on the mauka side of the Parkway.

- The **Residential District**, located makai of Kapolei Parkway, should feature multi-family housing units in a series of distinct neighborhoods tied together by a network of pedestrian and bicycle paths.

3.5.1.2 Key Open Space Elements

Four key open space elements should link together and unify Kapolei's districts into a distinctive, vibrant city. Each of these important spaces is described below:

Kapolei Regional Park should be the major park for both the City of Kapolei and the surrounding region. It should also function as both the City's mauka edge and as a visual gateway to the City. As a strong activity node with a variety of recreational opportunities, it should reinforce the image of Kapolei as a place where people can lead an active, healthy lifestyle.

The park should provide opportunities to participate in a diversity of recreational activities. Facilities should be included to allow users to bike, walk, hike and jog, and to play volleyball, soccer, football, baseball, and tennis. Multi-use open space should also be available for picnicking, sunbathing and relaxing.

Facilities for public concerts and gatherings, such as an amphitheater and pavilions, as well as amenities for broader use and enjoyment, such as a formal garden, restaurants and water features, should also be included to help generate both day and evening activity in and around the park.

The makai edges of the park adjacent to the City's downtown should be designed to ensure a strong relationship between City and park. The various structures in this area and elsewhere in the park should be designed to ensure compatibility and integration with adjacent commercial uses.

Wai Aniani Way should function as a major open space axis and amenity within the most central and highest density area of the City. It connects the Regional Park and Civic Center, and should provide the central spine for the City Center district.

The corridor should be wide enough to provide a genuine sense of open space, yet not so wide as to disconnect developments on opposite sides from each other.

Canopy shade trees, ample landscaping, seating and water features should be prominent elements of the design in order to create a comfortable atmosphere and promote the idea of Kapolei as a garden city.

Palailai Mall should provide an open space cross axis to Wai Aniani Way, extending mauka-makai and connecting the City's residential sector to the heart of Kapolei's business district.

Canopy shade trees and benches, etc. should be provided as appropriate to establish the mall's character as a pleasant landscaped path for pedestrian circulation.

Extensive interaction between pedestrians and the activities in adjoining buildings, and the establishment of a "shopping promenade" character, should be fostered by encouraging the location of kiosks, sidewalk cafes, retail shops, and other people-oriented activities within and along the edges of the mall.

Village Walk should provide an informal pedestrian spine for the City's residential area, with connections to the Civic Center, the makai end of Palailai Mall, and the neighborhood park located at the corner of Fort Barrette and Renton Roads.

Landscaping, seating, and other furniture should be provided and arranged in a manner which establishes a pleasant atmosphere for informal gatherings of neighbors, as well as for movement through the area.

Both pedestrians and bicyclists should be accommodated in a manner which minimizes conflicts.

3.5.2 PLANNING PRINCIPLES

Seven major themes define key characteristics of the City of Kapolei and provide basic principles for the planning and design of developments in the City of Kapolei.

- **A Hawaii Garden City.** A city within a garden, in the style of long-established Hawaii communities, is to be created. The garden is distinguished by major parks and boulevards with trees, flowers, and abundant ground cover.

- **Healthy Living.** The garden city is to provide the setting for and encourage a healthy, outdoor, and active lifestyle through the interlacing of recreational facilities within the fabric of the entire city. These are to be connected by bike and walking paths.

- **Complete Community Services.** The theme of healthy living is to be supported by medical/health/fitness services and facilities. The City of Kapolei is also to serve the surrounding region with entertainment, cultural and religious facilities, State and City government offices, and other city activities.

- **Easy Access.** Within the garden city, attractive paths for walking and biking should allow for convenient access between homes, jobs, and recreational areas.

- **Design Reflecting the Past but Adaptable to the Needs of the Present and Future.** Building design in the City of Kapolei should reflect both the charm and more intimate human scale that characterizes the business districts of traditional Hawaii towns such as Hilo, and the market forces and functional needs that shape the architecture of present-day and future business centers.

- **Environmental Sensitivity.** Resource conservation should be emphasized in the design of both the overall city center and its individual parts. The network of bike and walking paths, combined with the concentration of uses which make urban life convenient, should encourage people to leave their cars at home. While landscaping should be abundant, only plants which require relatively little water should be used.

- **Transit Access and Orientation.** A transit node should be located near the Civic Center and City Center, and high density residential uses should be encouraged within a five minute walking distance of the node. Uses adjoining the node should be designed so that they face toward the node, encouraging pedestrian traffic to flow to and from the node.

As part of the Development Plan vision for a transit corridor linking the City of Kapolei, Waipahu, and the Primary Urban Center, higher density residential and commercial development should be encouraged around the City of Kapolei transit node and the transit corridor on Kapolei Parkway, superseding lower densities included in the City of Kapolei Urban Design Plan and the Unilateral Agreement elements.

3.5.3 GUIDELINES

To implement the general policies and planning principles for the City of Kapolei, the following guidelines for natural environment, public access, views and vistas, urban form, circulation, landscaping, lighting and signage, and future development and growth should be followed.

3.5.3.1 Urban Form

- Block lengths should be kept relatively small (300 to 400 feet) in order to provide for flexible, interesting and reasonably direct pedestrian routes between work places, restaurants and shops. Small block size will encourage people to walk for these trips.

- Density and heights for each of the districts of the City should follow the guidelines provided below.

DENSITY AND HEIGHT GUIDELINES FOR THE CITY OF KAPOLEI

DISTRICT	DENSITY	HEIGHT
City Center	2.5 FAR	150 feet
Commercial District	1.0	60
Civic Center	2.0	90
Mixed Use Districts	2.0	90
Village Center District	1.0	60
Residential District	2.0	90

3.5.3.2 Natural Environment and Landscaping

- The use of non-potable water features and automated irrigation systems should be used wherever possible.

- Xeriscaping (the use of low water demand landscape materials), use of brackish water for irrigation, and zoning of irrigation water areas should be followed wherever possible to conserve groundwater resources.

- Landscaping should be consistent with the City of Kapolei's image as a green and shaded garden city and should provide privacy, screening, shade, and temperature control.

- Landscaping should enhance and complement the City's urban form, provide continuity between the various districts, and enhance and preserve view corridors wherever possible.

3.5.3.3 Public Access and Circulation

- The City of Kapolei should be designed to provide safe, easy, and efficient access for pedestrian, bicycle, and vehicular movement between each of the districts, the open space areas, and recreational amenities.

- A clear pattern of arteries and local streets should be established to facilitate travel through the City and to and from individual properties. The streets should form a modified grid pattern, providing a variety of routes for circulation. Major streets include Kamokila Boulevard, Kapolei Parkway, Kama'aha Avenue, and Wakea Street, with Fort Barrette Road and Kalaeloa Road bounding the City on the west and east.

- Cross-section design and landscaping schemes should vary with function and to establish distinctive urban images for each type of street.

- Provisions should be made for bus pullouts and shelters along major traffic arteries.

- The median of Kapolei Parkway should be of sufficient width to accommodate a possible future at-grade separated rapid transit line.

- On-street parking should be permitted along all streets until such time as traffic levels necessitate the use of the entire roadway for vehicular movement. Such parking will be convenient for shoppers, provide a buffer between traffic on the street and pedestrians on the sidewalk, and contribute to the activity level along the City's streets.

- Exclusive bike lanes should be provided along major roadways within the City, and be connected to the region's bikeway system. Where automobiles and bicycles share the same roadway, lane widths should be generous to allow safe usage by both.

3.6 RESIDENTIAL DEVELOPMENT

This section describes the general policies, planning principles, and guidelines which are to be applied to existing and planned residential developments. They are described below for:

3.6.1 EWA VILLAGES

The former Ewa Development Plan included specific planning principles and standards to guide the Villages' development. More detailed guidance for the Villages' development is also provided by its **Master Plan**, prepared by the Department of Housing and Community Development (1989).

This revised Ewa Development Plan incorporates key elements for Ewa Villages from the former Development Plan and the **Master Plan** to provide guidance in the event that changes are proposed for the **Master Plan** or zoning in the future.

3.6.1.1 General Policies

The City and County of Honolulu has acquired the 600 acres surrounding and including Tenney, Renton and Varona Villages. The **Master Plan** for the Ewa Villages helps ensure continued tenancy and ownership opportunities for current residents as well as provides a vehicle for preservation efforts within the existing villages.

The existing village structures in the Ewa Villages should continue to be rehabilitated or adapted for reuse; and related affordable and market housing should be developed to create a total of 1,900 units, including the existing housing.

A City golf course has been recently developed to provide storage for storm waters. In addition, a district park, additional neighborhood parks/open space, and a small shopping center should be developed; and infrastructure improvements should be made.

Ewa Villages should once again stand as a thriving and identifiable community, and should serve as a living example of Hawaii's plantation heritage.

3.6.1.2 Planning Principles

Planning principles established in the **Ewa Villages Master Plan** to guide land use patterns and physical forms will implement these general policies. The principles are:

- **Preservation of Plantation Village Character.** The existing rural form and historic character of the remaining Ewa Villages should be preserved and enhanced.
- **Retention of Historic Buildings.** Existing buildings of historical, cultural and/or architectural significance should be preserved and maintained through rehabilitation programs and adaptive reuse.
- **Compatible Infill Development.** Vacant areas should be developed in a style that is characteristic of the historic core.
- **Support of Community Facilities.** The sense of the Ewa Villages as a complete community unit should be re-established through the preservation of existing schools and churches, the expansion of parks and public open space areas, and the establishment of community facilities and a market place for local businesses.

3.6.1.3 Guidelines

To implement the general policies and planning principles for Ewa Villages, the following guidelines should be followed.

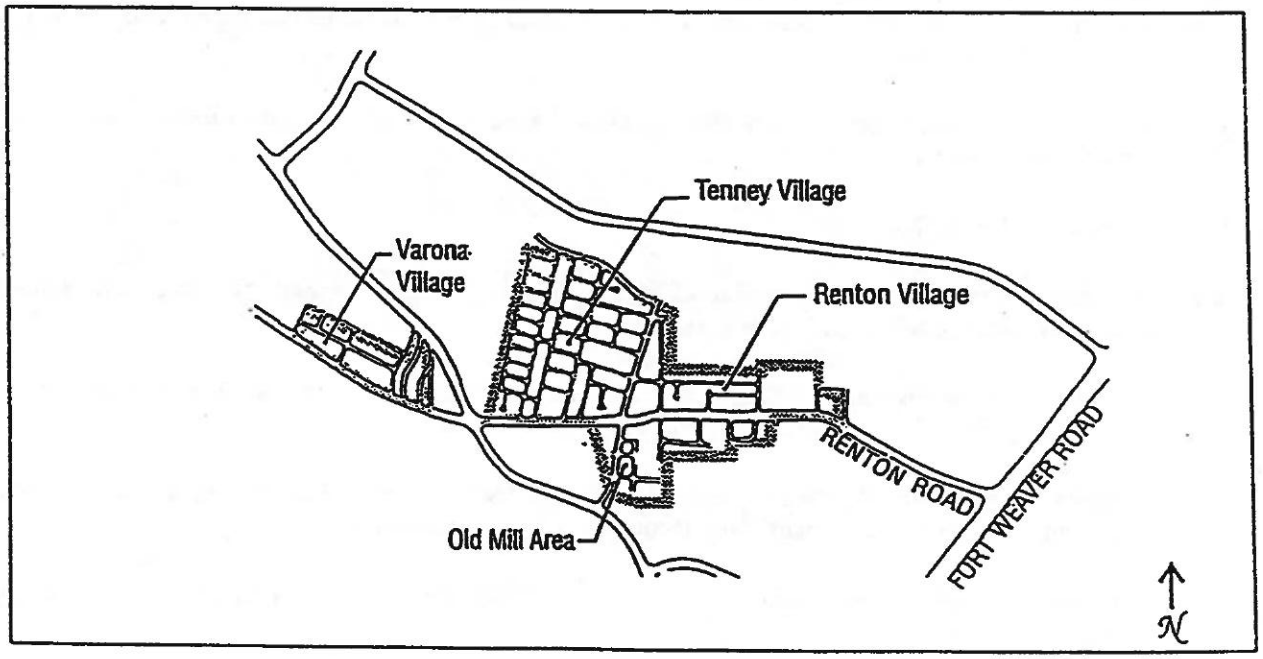
Urban Form

- The current grid development pattern should be maintained in the existing villages and replicated in new infill developments.
- Lot sizes for new infill homes in the existing villages should be similar to the existing house lots.
- Rehabilitation of existing structures should, to the extent possible, be done in a manner that will not change their exterior appearance.

- New structures on vacant lots in the existing villages should complement the exterior design of adjacent homes.

- New infill "villages" should generally be physically separated from Tenney, Renton and Varona Villages. The design, appearance and placement of structures within them should reflect and complement the existing village's character. (See Exhibit 3.4.)

Exhibit 3.4
Ewa Villages Location



Circulation

- Establishment of standard subdivision street hierarchy within the village should be prohibited in favor of maintaining the existing grid pattern and extending it into new infill development.

- Any new required collector streets should be located outside the existing villages.

- Narrower than standard street widths without sidewalks should be maintained (in the residential portions) of the existing villages, and established within new villages, in order to minimize the impacts on existing yards and structures, and visually maintain a rural village character.

- As part of a Historic Register site, Renton Road is designed to maintain two lanes of traffic in each direction during peak hours and one lane of traffic and one lane of restricted parking during non-peak hours.

Open Space/Views

- Where possible, open space buffers should be provided between the existing village and new housing development in order to preserve and enhance the integrity and historic character.
- Existing village greens and open promenades, etc. should be preserved and expanded, where possible.
- Existing landscaping within Renton, Tenney and Varona Villages, especially existing stands of mature palm, mango, banyan and monkey pod trees, should be preserved and maintained. Where trees have been removed, appropriate replacements should be provided.
- Appropriate canopy trees should be provided along all street frontages.
- Principal entry roads to and through the villages should be tree lined boulevards. Entries should be highlighted with additional landscape features.
- Yards and other open spaces should be landscaped and maintained in a manner which preserves and enhances the open space appearance of the villages.

3.6.2 EWA MARINA

The former Ewa Development Plan included specific development objectives, planning principles, and standards to guide development approvals for Ewa Marina. Ewa Marina's development is also guided by the **Ewa Marina Urban Design Plan** approved by the Department of Land Utilization in 1994 and by land use, environmental, and design requirements included in the Special Management Area Use Permit and in the Unilateral Agreement attached to the zone change ordinance (1993).

Development of the Marina can proceed under the existing zoning and Unilateral Agreement. This revised Ewa Development Plan incorporates key policies, planning principles, and guidelines from the former Development Plan as well as from the **Ewa Marina Urban Design Plan**, the Special Management Area Use Permit, and the Unilateral Agreement in order to provide guidance in the event that changes are proposed for the **Urban Design Plan** or the zoning.

3.6.2.1 General Policies

Ewa Marina, when developed, should be the region's principal recreational marina destination for local residents and visitors. Developed on over 1,100 acres located between Ewa Beach and Kalaeloa (Barbers Point Naval Air Station), the community should be centered around a 120-acre marina which should serve as a major recreational resource and visual amenity for the community.

The marina should provide recreational boating opportunities, supported by 1,400 boat slips, marine haul-out and other repair facilities, and a public boat ramp.

The City supports timely development of the Ewa Marina as a key element needed to mitigate drainage impacts in the Kaloi Gulch watershed during major storms. The marina's role as a storm water storage and detention basin has been acknowledged and included in previously approved environmental impact statements and land use approvals for projects in the Kaloi Gulch watershed.

Ewa Marina should provide substantial public areas through shoreline and waterfront access, expansion of One'ula Beach Park, and creation of a District Park on Fort Weaver Road. The public waterfront promenade at Ewa Marina should have a hard edge and should focus on boating activity. Shoreline parks linked by pedestrian ways

should be provided for public use along the entire waterway. A golf course should provide a major open space and visual amenity while also providing detention basins to receive run-off from light storms.

On the eastern end, the Ewa Marina community should consist of **Low and Medium Density Residential** neighborhoods extending westward from Ft. Weaver Road, encompassing the eastern "loop" of the marina and an island within the marina.

The existing community commercial center at Ewa Beach should be enlarged by development on land along Ft. Weaver Road at the eastern corner of the Ewa Marina community.

On the west, a mix of activities should be sited around the marina basin, including a **Marina Mixed Use** area with resort and commercial development, a **High Density Residential** area, and a **Marine Industrial** area. Ewa Marina is planned to have about 950 visitor units to support its marina-oriented activities.

3.6.2.2 Planning Principles

The general policies for the future of the Ewa Marina project are supported by the following planning principles:

- **Appropriate Scale and Siting.** The visibility of large building volumes and elements from waterfront and residential areas should be minimized through building envelope restrictions, site planning and landscaping.

- **Environmental Compatibility.** Ewa Marina should be developed in ways that ensure environmental compatibility of uses, as indicated by the following:

  - [] Residential and apartment units should not be developed in areas that would expose residents to excessive aircraft noise.

  - [] If airport operations are continued at Barbers Point Naval Air Station after return to civilian use, land uses at Ewa Marina should be compatible with airport operations and respect restrictions on development within airport approach and clear zones.

  - [] Uses that generate high noise levels should be located and operated in a way that keeps noise to an acceptable level in existing and planned residential areas.

  - [] The built environment should be designed and developed to avoid adverse impacts on natural resources or processes in the coastal zone.

  - [] To retain a sense of place, the design of hotel and recreation areas should incorporate natural features of the site and utilize landscape materials that are indigenous to the area where feasible.

- **Community Integration.** The design of Ewa Marina may have a distinct identity and entry, but the Marina should be linked with surrounding areas, such as Ewa Beach and Kalaeloa, through the use of connecting roadways, walkways, landscape or architectural design.

3.6.2.3 Ewa Marina Land Use Map

The Ewa Marina Land Use Map, Exhibit 3.5, illustrates conceptual land uses described above and provides a schematic view of the roadway system within Ewa Marina. Special land use designations sited around the marina basin are described below:

Marina Industrial. This area should be limited to marina-related and other light industrial uses, including boat haul-out facilities.

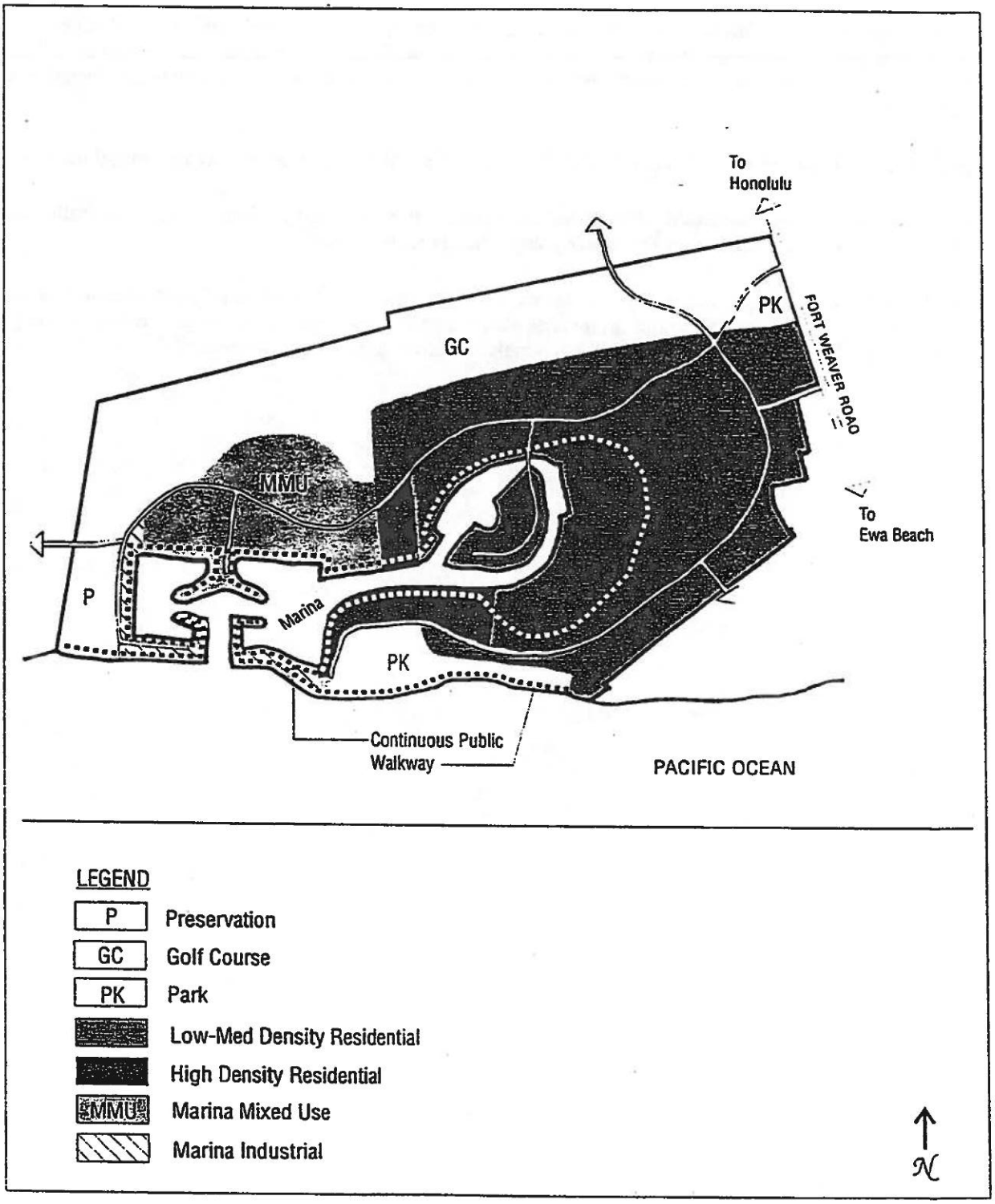
Marina Mixed Use. This area should have a mix of commercial, hotel and medium- and high-density residential uses. Resort uses should be limited to approximately 950 visitor units. Office uses are allowed but should primarily serve the hotel and residential uses. Commercial and recreational facilities are encouraged.

High Density Residential. This area should be limited to medium- and high-density residential uses.

Low and Medium Density Residential. This area should have low- and medium-density residential units which will provide a transition to the existing single family units in Ewa Beach.

The boundaries between the golf course and the Marina Mixed-Use and Low- to Medium-Density Residential areas are intended to be flexible. Integration of urban uses with the golf course area is encouraged, as long as the golf course area does not decrease substantially, and it remains effective in retaining stormwater drainage.

Exhibit 3.5
Ewa Marina Land Use Map



3.6.2.4 Guidelines

Based on the planning principles, the development of Ewa Marina should be directed by the following guidelines:

Urban Form

- **Marina Industrial.** A light industrial marina support area should be developed adjacent to the marina providing facilities such as repair and storage. Building heights should generally not exceed 60 feet in this area.

- **Marina Mixed Use.** A maritime commercial center with associated visitor units should be developed adjacent to the marina, featuring a wide public promenade with retail attractions. Hotel and apartment buildings in this area should generally not exceed 90 feet and all other buildings should generally not exceed 60 feet. Buildings with marina frontage should be limited to 40 feet. Buildings taller than 40 feet should be set back from the marina frontage.

- **High Density Residential Area.** A high density residential area located adjacent to the Marina Mixed Use area and across the marina waterway behind Oneula Beach Park provides a transition between the mixed uses of the Marina Mixed Use area and the Low and Medium Density Residential area to the east. Building heights in this area should generally not exceed 60 feet.

- In order to minimize the visual impacts of the High Density Residential areas near the marina entrance and adjacent to Oneula Beach Park, the developer should:

  [] Maximize mauka-makai and other view corridors in the area by orienting the narrow dimension of building parallel to the shoreline or predominant view,

  [] Maximize open space by minimizing building bulk and using extensive landscaping to create a park-like setting, and

  [] Provide greater setbacks and/or terraced building set back from the edge of the marina waterways for buildings exceeding 25 feet in height.

- **Low and Medium Density Residential Area.** A residential community characterized by low-rise apartments and single family homes should be developed in this area. Building heights should generally not exceed 30 feet.

- With the exception of the island within the marina, there should be a minimum building setback of about 40 feet along the marina's edge to accommodate a public waterfront promenade. On the island within the marina, the minimum setback may be as little as five feet. Lesser setbacks may be permitted upon design review and approval by the Department of Planning and Permitting.

- In commercial and marina support areas, a small portion of the setback area may be covered by low-rise buildings to allow for boat servicing, marina storage and clubhouses.

- The maximum building height at the setback line in commercial and marina support areas should be around 40 feet, rising one foot for each additional foot of setback to a maximum of around 60 feet in the High Density Residential area and around 90 feet in the Marina Mixed Use area.

- All structures should be set back a minimum distance of 150 feet from the shoreline. Lesser setbacks may be permitted upon design review and approval by the Department of Planning and Permitting. The maximum building height at the setback line along the shoreline should be 40 feet, rising one foot for each additional foot of setback up to the appropriate height limit.

Natural Environment

- Wetlands and other wildlife habitats should be retained, enhanced and protected.
- The golf course and marina should be designed to accommodate stormwater runoff in a manner which maintains coastal water quality and avoids the use of concrete channels for diversion drainage. The waterway should be designed to accommodate the runoff of collected storm waters generated by a potential 100-year storm. Channel design should use the most effective means to provide natural flushing of its waters. Silting ponds should be developed mauka of the site to preserve water quality so that use of the marina and near-shore waters for recreational purposes and aesthetic enjoyment is not limited in any way.
- The marina entrance should avoid the use of breakwaters or jetties, in order to preserve surf sites.

Public Access

- There should be a continuous pedestrian pathway open to the public along the shoreline and along most of the marina, with the exception of sections where private residential lots directly front the marina.
- Access to the entire waterway and ocean shorelines should be available to the public through the internal and peripheral pedestrian pathways.
- Public parking, rest rooms, and shower facilities should be provided at regular intervals for all sandy beach areas.

Views and Vistas

- Views from public streets and thoroughfares to the mountains and sea should be preserved and enhanced wherever possible. In particular, distant views of the Waianae Range and the south coast of Oahu toward Honolulu and Diamond Head from the public promenade near the marina entrance channel should be preserved.
- Hotel and apartment facilities should be oriented lengthwise away from the waterfront in order to maximize both mauka and makai views.

Circulation

- The street network should include provision for a reasonably direct route through Kalaeloa (Barbers Point Naval Air Station) to connect Ewa Marina to the City of Kapolei.
- All major roadway corridors should be designed to provide for bus pullouts and bus shelters, bikepaths, and sidewalks that are separated from the vehicular travelway by a landscape buffer.

Landscape Treatment

- Generous landscaping and vegetation should be provided throughout the development to promote tropical beauty and provide visual relief and a feeling of spaciousness.
- Landscaping should provide continuity between residential, resort, marina, commercial areas, the shoreline, golf course, and parks.
- Landscaping should provide privacy, screening, shade and temperature control.

3.6.3 EXISTING AND PLANNED RESIDENTIAL COMMUNITIES

This section provides general policies and guidelines for the development of new communities and the expansion or renovation of existing communities.

3.6.3.1 General Policies

The following general policies may be applied to the expansion or renovation of existing residential communities, as well as to new communities.

Overall Density. To achieve the desired compactness and character of development in planned residential communities, the housing density of the aggregate area zoned for residential use (including the streets) should be in the range of 10 to 15 units per acre. (This average does not include areas zoned for commercial or industrial use.)

Table 3.2 gives an overview of the density and height guidelines for planned and existing residential developments. Conceptual locations for low, medium, and high density residential development are shown on the Urban Land Use Map in Appendix A and in maps of specific developments in Exhibits 3.3, 3.5, and 3.6. See Section 3.6.3.3 for further discussion of the Urban Land Use Map.

Higher Density Housing Along the Transit Corridor. To promote use of mass transit, higher-density residential use should be developed along a major rapid transit corridor linking Kapolei with Waipahu and Primary Urban Center communities to the east. High-Density Residential and Commercial uses should be developed at six transit nodes, which would cover a one-quarter-mile radius around major transit stops. Areas along the rapid transit corridor should have housing densities of 25 units per acre, and greater densities are expected within the transit nodes.

Physical Definition of Neighborhoods. The boundaries of neighborhoods should be made evident through the use of street patterns, landscape or natural features, and building form and siting. The focus of neighborhood activity should be on the local street or a common pedestrian right-of-way or recreation area.

TABLE 3.2: DENSITY AND HEIGHT GUIDELINES BY RESIDENTIAL DENSITY CATEGORY

Residential Category	Density (Housing Units)	Building Height
Low Density	5-12/acre	not over two stories
Medium Density	10-30/acre	not over three stories
High Density	25-90/acre	not over 90 ft [1]

[1] Building heights up to 150 feet allowed in City of Kapolei and Ko Olina.

Compatible Mix of Building Forms. There should be a variety of housing types and densities to avoid visual monotony and accommodate a variety of housing needs, but without sharp contrasts between the exterior appearance of adjacent housing areas.

Transit-Oriented Streets. Street patterns and rights-of-way should be designed to accommodate mass transit service and make it convenient to access for as many households as possible.

Pedestrian and Bicycle Travel. Pedestrian and bicycle travel should be encouraged, particularly to reach neighborhood destinations such as schools, parks and convenience stores.

Integration of Linear Corridors. Physical and visual connections between communities should be encouraged through the creative design of transportation and utility corridors and drainage systems.

Provision of Community Facilities. Land should be provided for community facilities including churches, community centers, and elderly and child care centers.

3.6.3.2 Guidelines

Guidelines to implement the general policies are provided below.

Low Density Residential

Low Density Residential areas consist of one and two-story single-family attached and/or detached dwellings with individual entries.

Density

- Density should be 5 to 12 units per acre, typical of residential zoning districts and allowing the application of optional design standards for Clusters and Planned Unit Developments.

Building Height

- In general, buildings should not exceed two stories, although the height may vary according to required flood elevation, slope, and roof form.

Site Design

- The site design for small-lot developments should avoid monotonous rows of garages and driveways along neighborhood street frontages by employing features such as varied building setbacks and shared driveways.

Building Form

- Buildings should provide visual interest and individual identity by using varied roof forms, exterior colors and finishes, building orientation, floor plans and architectural details.

Medium Density Residential

Medium Density Residential areas consist of two- and three-story townhouse or low-rise apartment buildings. Dwelling units may have common entries, but buildings are typically non-elevator structures.

Density

- Density should be 10 to 30 units per acre.

Height

- In general, buildings should not exceed three stories above grade. Maximum building heights should allow for pitched roof forms.

Building Form

- Building form, orientation, location of entries and landscape screening should be employed to maintain a sense of residential scale and provide greater privacy and individual identity for housing units.

Compatibility

- Building scale, roof form and the quality of materials should be compatible with those of adjacent low-density residential areas.

High Density Residential

High Density Residential developments take the form of multi-story apartment buildings. They may be located in mixed-use zones, with the ground floor or lower floors occupied by retail and service commercial uses.

Location

- In general, high-density residential buildings would be located in large planned residential communities, adjacent to major collector streets, commercial or civic centers.

- High Density Residential is intended to be the predominant form of housing in and near the City of Kapolei and around transit nodes on the planned rapid transit corridor between Waipahu and Kapolei.

Density

- Allowable building density should accommodate 25 to 90 units per acre.

Height

- Building heights should not exceed 150 feet in the City of Kapolei and the Ko Olina Resort and 90 feet elsewhere. Taller building heights are intended to allow higher densities, create variation in the city-scape, [and] give a visual sign of transit nodes, and identify the City of Kapolei's importance as a regional center.

Architectural Character

- The building scale, roof form and the quality of materials may reflect a more urban character.

Height Setbacks

- Building height setbacks and landscaping should be employed to reduce the direct visibility of taller buildings from lower density residential areas and from the streetfront. Lower building elements may directly abut the streetfront.

Circulation System

Master-planned projects should each have a circulation plan, or "circulation element" in their Project Master Plan (see Chapter 5).

Transit Routes and Facilities

- The circulation plan should define the hierarchy of streets within the project and its relationship to the surrounding transportation network.

- The circulation plan should also indicate existing and proposed bus routes and specific measures to accommodate efficient transit service for as many households as possible.

- The rights-of-way along transit routes should make provisions for bus shelters, bus pull-outs, and, if applicable, park-and-ride facilities and/or future transit stations.

Pedestrian and Bicycle Routes and Facilities

- The circulation plan should indicate any principal pedestrian and bicycle paths that are physically separated from roadways.

- Street intersections along these separated paths should have a narrow curb radius and include special signage and paving to encourage safe and convenient pedestrian and bicycle crossings.

- Interior pedestrian/bicycle routes may be provided as an alternative to paved sidewalks along local streets.

- Most residences should be within a five-minute (or one-quarter mile) walking distance of a proposed bus route, unless localized topographic conditions make such a requirement impractical.

Landscape Treatment

- Conceptual street tree plans should be indicated in the circulation plan.

- Entries to the community should be identified with special landscape treatment.

- The rights-of-way for major arterials and major collector streets should be designed as landscaped parkways, complete with a landscaped median strip, landscaped sidewalk, and bikeways. Major arterials should have separate bike paths, and major collectors should have bike lanes. Suggested width for major arterials, including right-of-way and planting strips, is 120 feet wide and for major collectors is 100 feet wide.

- Canopy trees should be planted to shade the sidewalk/bikepath areas.

- Landscape treatment along the edges of the project should be appropriate for the natural setting and designed to provide continuity and transition from adjacent developed areas.

3.6.3.3 Relation to Urban Land Use Map

Residential areas are shown on the Ewa Urban Land Use Map in Appendix A as follows:

Low- and Medium-Density Residential. Areas with this designation should be zoned as a residential or a low-density apartment district, subject to appropriate siting considerations and the General Policy for "Overall Density" provided above in Section 3.6.3.1.

High-Density Residential. Areas with this designation should be zoned predominantly for medium- to high-density apartment use. Mixed use, with retail activities at the ground level, is encouraged.

The following uses are not specifically designated on the Urban Land Use Map but are allowed in all residential areas: neighborhood commercial centers, elementary schools, parks, churches, community centers, elderly care centers, child care centers, fire stations, and other public facility and utility uses serving the area.

All residential developments should be compatible with Aircraft Approach and Clear Zones for Honolulu International Airport (and Barbers Point Naval Air Station if airport operations continue after return to civilian use).

3.6.3.4 Relation to Zoning

Table 3.3 provides guidelines for the zoning that may be appropriate to each of the land use designations indicated in the revised Development Plan.

It is intended for use as a reference which would permit modification or creation of Land Use Ordinance zoning categories and land use regulations in response to changing conditions without needing to amend the Development Plan.

3.7 NON-RESIDENTIAL DEVELOPMENT

This section provides general policies, planning principles and guidelines for the non-residential development, including planned commercial retail centers, Ko Olina Resort, industrial centers, Kalaeloa (Barbers Point Naval Air Station), Pearl Harbor Naval Base (West Loch), and the University of Hawaii West Oahu.

TABLE 3.3: GUIDELINES FOR APPROPRIATE ZONING

Land Use Designation	Appropriate Zoning District(s)
Park, Golf Course, Preservation/Conservation, Military Training Area	P-2 if in State Urban or Agriculture District P-1 if in State Conservation District; otherwise P-2 F-1
Agriculture	AG-1 for all areas except where there is a predominant pattern of lots under 5 acres in size AG-2 for areas where lots are under 5 acres in size
Low and Medium Density Residential	R-5, R-7.5, R-10 for conventional single-family subdivisions R-3.5 if identified by Project Master Plan for innovative small lot site design A-1 for low-rise flats, apartments, and townhouses A-2 if identified by Project Master Plan for medium density apartment development AMX-1, AMX-2 if within one-quarter mile of a transit node
High Density Residential	A-2, A-3 AMX-2, AMX-3 if within one-quarter mile of a transit node
Commercial Centers	B-2 with limits on floor area for office use for all types of centers except Neighborhood Commercial Centers B-1 for Neighborhood Commercial Centers (not shown on Urban Land Use Map) B2, BMX-3 for the Ko Olina Marina Mixed Use area
Town Center	B-2, BMX-3 A-1, A-2 I-1, I-2 in fringe areas where present use is predominantly service industrial
Resort	Resort
Technology Park	New zoning category designed specifically for this use; for interim, retain the existing IMX-1 and B-2 zoning with use limitations as specified in the UA.
Industrial	I-1 I-2 for service industrial areas near City of Kapolei and master-planned communities I-3 in vicinity of Barbers Point Deep Draft Harbor and of Ewa Marina

3.7.1 PLANNED COMMERCIAL RETAIL CENTERS

This section provides general policies, planning principles and guidelines for the development of commercial retail centers in Ewa.

3.7.1.1 General Policies

Planned commercial centers, outside of the City of Kapolei, should provide retail shopping and services for the Ewa residential communities in which they are located. These centers differ from commercial areas within towns such

as Waipahu or the City of Kapolei because they are typically managed as a unit with shared parking and center management.

Commercial centers outside of the City of Kapolei should concentrate commercial uses in central locations instead of in continuous commercial strips along arterial roads. Pedestrian and transit access to and within the centers should be emphasized.

Definitions. Four types of commercial centers can be defined based on size and function:

- **Neighborhood Commercial Center** (5-10 acres or less, typically located within or adjacent to residential area, up to 100,000 square feet [sq. ft.] of floor area);
- **Community Commercial Center** (10-30 acres, typically located on an arterial highway or at the intersection of two major collector streets, up to 250,000 sq. ft. of floor area);
- **Major Community Commercial Center** (up to 50 acres, located in communities which are not near an urban center, up to 500,000 sq. ft. of floor area); and
- **Regional Commercial Center** (more than 50 acres, located with frontage on a major arterial highway and access from freeway interchange, more than 500,000 sq. ft. of floor area).

No Major Community Commercial Centers or Regional Commercial Centers are indicated for Ewa outside of the City of Kapolei since the City of Kapolei is intended to provide for regional shopping needs.

Neighborhood Commercial Center. Neighborhood Commercial Centers can be located within any residential community, and should be reviewed and approved as part of development of master planned residential communities or redevelopment of existing communities. Neighborhood Commercial Centers have frontage on at least one collector street, and may have up to 100,000 sq.ft. of floor area, which is leased to tenants such as grocery stores, sundries stores and other services and shops catering to common household needs.

Single commercial establishments, such as convenience stores or "Mom and Pop" stores, or groupings of stores smaller than five acres in size also fall within this category, provided that they are appropriately located and will not contribute to the evolution of a commercial strip.

Community Commercial Center. This type of center principally serves the community in which it is located, providing for basic shopping and service needs on a larger scale than the neighborhood center. Community Commercial Centers may contain up to 250,000 sq.ft. of floor area, and major attractions typically include a large grocery store, a drug store, and/or a department store. The other, smaller tenants in the center are largely dependent on the effectiveness of the major tenants to draw customers. The Kapolei Shopping Center is an example of this type of commercial center.

Locations for existing and planned Community Commercial Centers at Ewa Beach, Laulani, Kapolei East (near the intersection of Farrington Highway and the North-South Road), Villages of Kapolei, Makaiwa Hills and Ko Olina Marina are shown on the Urban Land Use Map in Appendix A.

Office uses should not be a principal use in Ewa Community Commercial Centers. Offices which provide services to the local community may be included in the centers, but the emphasis should be on retail uses. In Ewa, developments primarily oriented to office uses should be located in the City of Kapolei.

3.7.1.2 Planning Principles

Planning principles for retail centers vary according to the size of the commercial center and the purpose it serves. The following planning principles apply to Neighborhood and Community Commercial Centers:

- **Mix of Uses.** Planned commercial centers should be dedicated primarily to retail uses and to office uses that provide services to the surrounding community. Residential uses may also be incorporated in such commercial centers.

- **Appropriate Scale.** The building mass of a commercial center should be in keeping with its urban and natural setting.

- **Compatible Style.** The architectural character of commercial centers should respect the surrounding urban and natural features, particularly when located adjacent to a residential area or significant natural or historic feature. Neighborhood commercial centers should reflect a residential architectural character.

- **Accessibility.** Commercial centers should incorporate site design and facilities to promote pedestrian, bicycle and transit access. Pedestrian and bicycle access is more important for smaller, neighborhood centers, while transit access is more significant for community centers.

These planning principles should be applied to the expansion or renovation of existing commercial centers, as well as to new centers.

3.7.1.3 Guidelines

The following guidelines would help implement the general policies and planning principles listed above.

Neighborhood Commercial Centers

Architectural Character

- The architectural character should respect adjacent residential uses.

- Gable and hip-form roofs are encouraged, using breaks in the roof line to reduce the apparent scale of large roof plates.

- Residential character may also be expressed by using exterior materials and colors that are typically found in neighborhood houses.

Building Siting

- Buildings should be oriented to the pedestrian.

- Storefronts should face the street and, to the extent possible, be sited close to the sidewalk.

- Parking and service areas should be placed behind the buildings or otherwise visually screened from streets and residential areas.

Building Height and Density

- Buildings should maintain a residential scale.
- Building height limits should allow for gable and hip-form roof elements.
- The total floor area for a lot or contiguous lots with common parking should not exceed 100,000 sq. ft.

Vehicular Access

- Access to the parking and loading areas should be from a collector street.
- Access to a local residential street may be permitted if it is only for emergency or secondary access and would not encourage through traffic along the local street.

Pedestrian and Bicycle Facilities

- There should be at least one pedestrian access from the public sidewalk or other off-site pedestrian pathway to the entrances of establishments in the commercial center that does not require crossing a traffic lane or parking lot aisle or driveway.
- Bicycle racks should be designed to provide security and be visible from the street entry.

Visual Screening, Lighting & Signage

- Parking and service areas should be screened from the street and adjacent residential lots by planting a landscape screen of trees and hedges along street frontages and property lines and planting shade trees throughout the parking lot.
- Only low-level or indirect lighting, if any, should be used in parking lots.
- All signage should be unilluminated or indirectly illuminated.

Community Commercial Centers

Architectural Character

- The architectural character may be varied, depending on the context.
- Commercial center buildings that are visible from adjacent residential areas should reflect a residential character; other facades may have a character more typical of a commercial building.
- The design should avoid disruptive contrasts between facades that are visible simultaneously from public areas.

Building Bulk and Massing

- When the building is adjacent to a residential area or a building of historic value, there should be a transition in scale from larger building elements of the commercial center to finer elements near the adjacent use.

- Portions of buildings visible from a street should avoid blank facades by using texture, articulation, color and fenestration to create visual interest.

- Facades that are close to the public right-of-way should be composed of display windows and pedestrian entrances.

Building Height and Density

- Building heights should generally not exceed 45 feet.

- The total floor area should not exceed 250,000 sq. ft. for a standard Community Commercial Center.

Pedestrian, Bicycle and Transit Facilities

- Street frontage improvements for bus stops, including a bus shelter and a pull-out off a traffic lane, should be provided along all abutting streets which have bus routes.

- There should be a pedestrian pathway from the bus stop to an entrance to the main building of the commercial center. The pathway should be clearly indicated with special paving or markings and covered to provide weather protection, if the commercial center building is not directly connected to the bus shelter.

- Bicycle racks should be designed to provide security and be visible from the street entry to the commercial center.

Visual Screening

- The visibility of parking and service areas from the street and adjacent residential areas should be minimized through screening.

- A landscape screen, consisting of trees and hedges, should be planted along the street fronting the parking lot or garage.

- If there is a parking lot, shade trees should be planted throughout.

- If there is a parking garage close to and readily visible from a street, landscape planters should be provided along the facade of each parking level fronting the street.

- Service areas should be visually screened from public and residential areas.

Signage

- Signage visible from residential areas should be indirectly illuminated.

3.7.2 KO OLINA RESORT

The former Ewa Development Plan included specific development objectives, planning principles, and standards for Ko Olina Resort, under its former name of West Beach. The Unilateral Agreement to the 1986 zoning ordinance for the Resort includes detailed conditions regarding the master plan of the resort, building design, design of the public shoreline area, and public access to the shoreline.

Development of the Resort can proceed based on the existing zoning and Unilateral Agreement. This section of the revised Development Plan incorporates key elements for Ko Olina Phase I from the former Development Plan and the Unilateral Agreement. Development of Ko Olina Phase II will be guided by the vision and policies for master planned residential communities described above in Chapter 2 and Section 3.6.3.

3.7.2.1 General Policies

Ko Olina Resort is designated in the General Plan as one of four "secondary" resort destinations which are part of an overall strategy to relieve growth pressure on Waikiki.

The resort, which is located on 640 acres between Kahe Point Beach Park and the Barbers Point Deep Draft Harbor, should be an integral part of the Secondary Urban Center.

When developed, Ko Olina Resort should be a water-oriented residential and resort community with about 4,000 visitor units in hotels and resort condominiums and 8,700 residential units in Phase I and II. Ko Olina is master-planned to incorporate recreational features in addition to visitor accommodations. Recreational facilities include two golf courses, a small boat marina, and four man-made swimming lagoons. Development for the first golf course and the swimming lagoons, and installation of roads and utilities are completed. Development of the second golf course will occur in Phase II. The first hotel opened in 1993 with almost 400 rooms.

As it develops, Ko Olina should provide substantial waterfront areas for public use. The entire shoreline should be natural open space, softened by landscaping, and should focus on the beach and swimming lagoons.

3.7.2.2 Planning Principles

Planning principles to implement the general policies for Ko Olina are provided below.

- **Appropriate Scale and Siting.** The visibility of large building volumes and elements from waterfront and residential areas should be minimized through building envelope restrictions, site planning and landscaping.

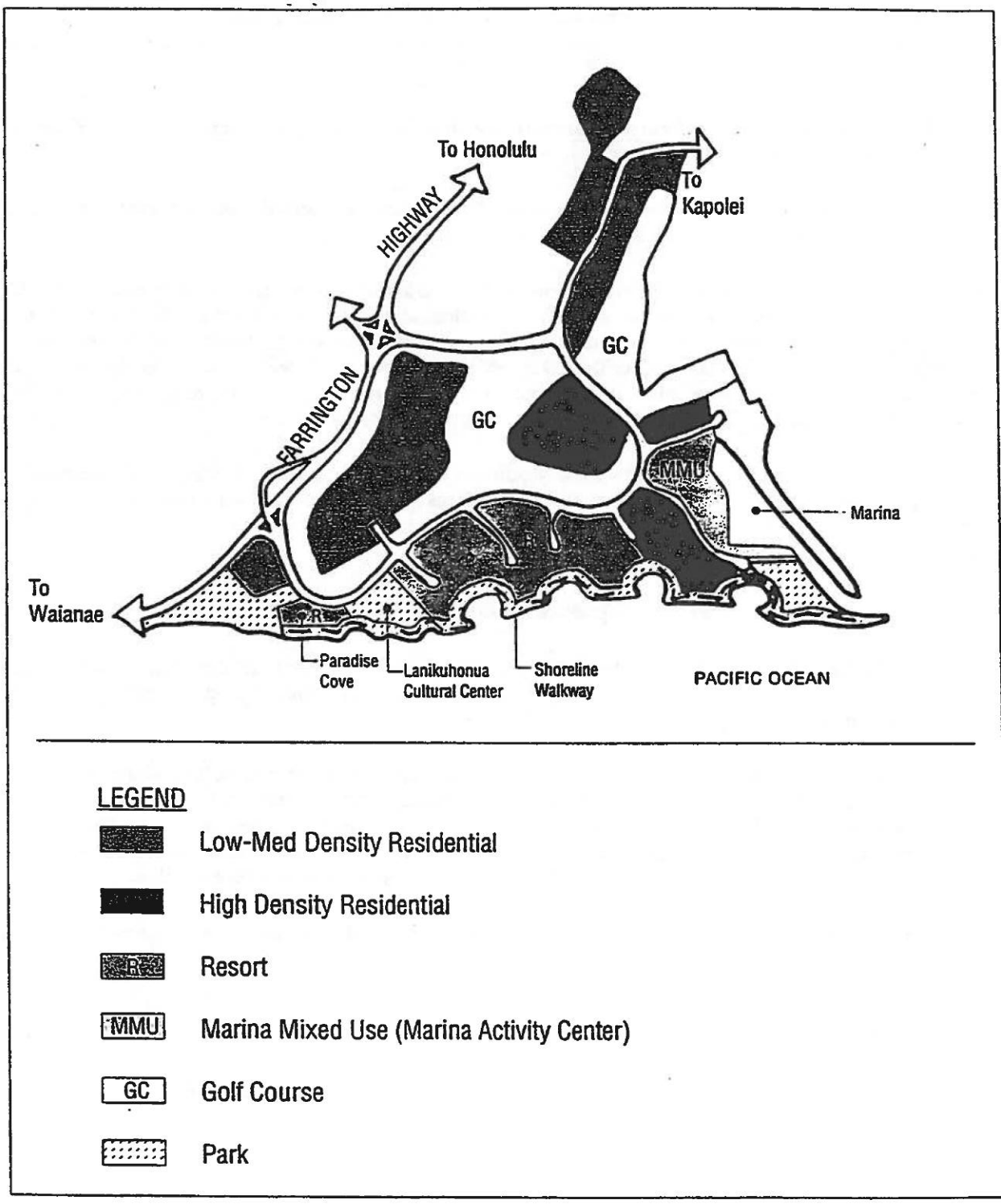
- **Environmental Compatibility.** Uses that generate high noise levels should be located and operated in a way that keeps noise to an acceptable level in existing and planned residential areas. The built environment should avoid adverse impacts on natural resources or processes in the coastal zone. To retain a sense of place, the design of resort and recreation areas should incorporate natural features of the site and utilize landscape materials that are indigenous to the area where feasible.

- **Community Integration.** The design of resorts and recreational attractions may have a distinct identity and entry, but the resorts and attractions should be linked with surrounding areas through the use of connecting roadways, walkways, landscape or architectural design.

3.7.2.3 Ko Olina Land Use Map

The Ko Olina Land Use Map, Exhibit 3.6, shows land uses and a schematic view of the roadway system within the Ko Olina Resort.

Exhibit 3.6
Ko Olina Land Use Map (Phase I)



Land uses include the following:

Resort. Resort sites are located along the shoreline and should have hotels, apartments, and accessory commercial and recreational facilities for resort use. The Lanikuhonua cultural center, located at the northern end of the resort area, should be principally open space with accessory structures as needed to support the cultural center use. The Paradise Cove site, located between Lanikuhonua and the park, should be used for resort commercial purposes.

High Density Residential. High density residential uses are located along the shoreline between Mauloa Place and Waipahe Place and near the Marina Activity Center. (A high density residential area is also located in Ko Olina Phase II near the City of Kapolei.)

Marina Mixed Use. The Marina Activity Center is located in this area and should have a mix of commercial and high-density residential uses.

Low and Medium Density Residential. Two low and medium density residential areas located within the golf course are included in Ko Olina Phase I.

3.7.2.4 Guidelines

Guidelines for development of Ko Olina include the following:

Urban Form

- **Marina Activity Center**. A higher density, centrally located hub should be established adjacent to the marina to serve as the activity center for the community and as an attraction that enhances Ko Olina's role as a secondary resort destination area for Oahu.

  Commercial mixed use development should be permitted in the area generally bounded by the marina, Waipehe Street, Aliinui Drive, and Kekai Place. This area should consist of marina frontage with public promenade, commercial mall, and Medium or High Density residential developments.

  Marina frontage should generally have a height limit of 40 feet. Buildings taller than 40 feet should be set back from the marina frontage. Variations in the amount of setback needed may be made to add visual interest. High density residential buildings and commercial buildings in this area should generally not exceed 150 feet.

- **High Density Residential Area**. A high density residential area located along the shoreline between Mauloa Place and Waipahe Place provides a transition between the mixed uses of the Marina Activity Center and the Resort Center. Two additional high density residential areas are located on Kekai Place and on Aliinui Drive. Building heights in these areas should generally not exceed 150 feet.

- **Resort Center**. A resort destination area containing up to 4,000 visitor units should be developed in the area designated for Resort use on Exhibit 3.6. Hotel and apartment buildings in this area should generally not exceed 150 feet.

- Buildings at Lanikuhonua and Paradise Cove should be limited to no more than 40 feet in height.

- Compatibility of uses and design integration should be encouraged at the boundaries separating different use areas.

- Land within one-half mile of the centers of petroleum and explosives terminals at the Barbers Point Deep Draft Harbor should not be designated for Resort, Apartment, Residential, or Commercial use.

Natural Environment

- All structures should generally be set back a minimum distance of 300 feet from the shoreline. Lesser (or greater) setbacks may be permitted upon design review and approval by the Department of Planning and Permitting.

- The existing coastal environment should be protected against potential negative impacts associated with increased recreational use and public access to the shoreline.

- Further modification to the shoreline, including the man-made lagoons, is discouraged unless required either to meet the conditions of existing approvals or to address demonstrated deterioration to the quality of coastal resources. Modifications or alterations to the shoreline should be reviewed on a case-by-case basis.

Shoreline Access

- A continuous public pedestrianway should be provided along the entire shoreline fronting the resort, anchored at either end by public beach parks. Public access should be provided along the shoreline fronting Lanikuhonua and Paradise Cove, but not in as formal a manner as that provided on the shoreline frontage of the adjacent hotel, apartment, and commercial Ko Olina resort sites.

- In addition to the public parks at each end of the resort, a series of privately owned and maintained parks encompassing a minimum of 20 acres of land should be provided along the shoreline. These private parks should be open to use by the general public and accessible from the continuous shoreline public pedestrianway.

- A public access easement, parking lot and rest rooms and showers should be provided at each of the four swimming lagoons.

Views and Vistas

- Views from public streets and thoroughfares to the mountains and sea should be preserved and enhanced wherever possible.

- Hotel, commercial, and apartment buildings should be oriented lengthwise away from the shoreline to maximize mauka and makai views.

- Important views of landforms along the Waianae Coast, the ridgeline of the Waianae Range, and the ocean should be protected, including but not limited to the following:

  - [] Makai view from Farrington Highway at the entrance to Ko Olina;

  - [] Makai view from Ko Olina coastal roadways makai of Farrington Highway;

  - [] Views of the Waianae coast from the shoreline at Ko Olina; and

  - [] Mauka and lateral views of Ko Olina from the Small Boat Harbor and the Deep Draft Harbor.

- There should be variation in building heights near the shoreline and along the marina frontage, particularly to preserve long views and minimize the perception of building bulk from the shoreline, beach, and marina frontage.

Circulation System and Transportation Facilities

- An integrated bikeway and pedestrian circulation network should be established throughout the resort, with bicycle lanes and routes and sidewalks along major roadways, lined with shade trees.

- The OR&L right-of-way should be reserved for a bikeway and historic railroad train service for theme rides between Ko Olina, Kapolei, and Waipahu.

Landscape Treatment

- Generous landscaped open spaces should be provided throughout the resort area to promote tropical beauty and provide visual relief and a feel of spaciousness.

- Landscaping should provide continuity between residential, resort, marina, and commercial areas and the recreational areas at the shoreline, parks, and golf courses.

- Landscaping should enhance and preserve view corridors and provide privacy, screening, shade and temperature control.

3.7.3 INDUSTRIAL CENTERS

This section provides general policies, planning principles, and guidelines for development of industrial centers and industrial uses in Ewa.

3.7.3.1 General Policies

Industrial centers in Ewa include the Barbers Point Industrial Area and Honouliuli Industrial Area. Industrial activity should also be permitted at other dispersed industrial areas, as noted below.

As an alternative to industrial uses, a commercial, cultural or recreational entertainment attraction may be permitted in the area fronting the OR&L Historic Railway, provided that the use is designed to enhance the viability of the operation of the railway for historic theme rides, strengthen the linkage between the Ko Olina Resort and the City of Kapolei and proceed with a strong community based planning process.

Barbers Point Industrial Area

Barbers Point Industrial Area includes Campbell Industrial Park, Barbers Point Deep Draft Harbor, Kenai Industrial Park, and Kapolei Business Park. It should continue to grow as one of Oahu and the State's most important industrial areas. It is the site of the State's largest heavy industrial area (Campbell Industrial Park) and an important industrial harbor and fuel transfer point.

The future industrial and transportation uses of Barbers Point Naval Air Station (BPNAS) will be determined by the Barbers Point Redevelopment Commission. The northern parts of Kapolei Business Park and any BPNAS lands designated for industrial use should provide for light industrial uses as a transition between heavy industry at Campbell Industrial Park and the City of Kapolei.

An additional electrical power generating plant could be constructed at the Barbers Point Industrial Area, possibly taking advantage of cogeneration opportunities with other industrial activities. The 138 kilovolt transmission corridor running from the Barbers Point Industrial Area to Waiau could accommodate additional load on the existing poles.

Honouliuli Industrial Area

Honouliuli should remain a smaller industrial area, used primarily for wastewater treatment. It includes 13 acres of land in the Ewa by Gentry project which is designated for light industrial use. A power generation facility may be included if it is dependent on wastewater treatment operations and can be designed so that it is generally not visible from nearby major public rights-of-way, residential areas, and commercial areas.

The Honouliuli Wastewater Treatment Plant should be expanded to accommodate additional growth in the region as well as to provide additional facilities for higher levels of wastewater treatment. The City should acquire an additional 60 acres to accomplish this.

Other Industrial Areas

Service-oriented industrial uses should be allowed throughout the region as noted below. Uses requiring larger lots should be located in Campbell Industrial Park. Small-lot uses, including automobile repair shops, contractor's yards, and businesses serving residential and commercial areas, should be allowed to locate near the City of Kapolei in the Kapolei Business Park and on any industrial lands which may be designated within Barbers Point Naval Air Station.

The **Hawaiian Electric Company generating plant** in Kahe Valley should remain the largest source of electrical power on Oahu. The plant could be expanded which would take advantage of available land area, cooling system capacity, and power transmission lines.

The **industrial area planned for the western edge of Ewa Marina** should accommodate marine haul-out facilities, repair shops, and related small boat industrial uses.

3.7.3.2 Planning Principles

The general policies for industrial centers are supported by the following planning principles:

- **Appropriate Scale.** The visibility of large building volumes and tall building or machinery elements from resort areas, residential areas, commercial and civic districts, and parks should be minimized through site planning and landscaping.

- **Environmental Compatibility.** Industries and utilities that discharge air or water pollutants, even when treated, should be located in areas where they would impose the least potential harm on the natural environment in case the treatment process fails to perform adequately. Uses that generate high noise levels should be located and operated in a way that will keep noise to an acceptable level in existing and planned residential areas. The building setback from the shoreline should be a minimum of 60 feet in the Ewa coastal area, as recommended in the **Oahu Shoreline Study** (1989), and 150 feet where possible.

3.7.3.3 Guidelines

Based on the above planning principles, the following are guidelines for development of each of the industrial areas.

Barbers Point Industrial Area

Coastal Environment

- There should be a minimum building setback of 60 feet and 150 feet where possible. A lateral public access easement should be provided along the entire shoreline from the Barbers Point Deep Draft Harbor to Barbers Point Naval Air Station.

- The major entry point to the shoreline easement should continue to be at the Barbers Point beach park and lighthouse area, but at least one additional minor access, similar to the one at Kenai Industrial Park, should be provided at the drainage channel next to Barbers Point Naval Air Station and other points where public parking on the street is available.

Building Height and Mass

- Building heights should generally not exceed 60 feet when they consist of large mass.

- Taller, vertical structures are acceptable when required as part of an industrial operation, but a viewplane study should be conducted for structures over 100 feet in height to determine if they can be sited or designed to minimize visibility from residential, resort and commercial areas, public rights-of-way and the shoreline.

Use Allocation

- Small lots should be provided within the Kapolei Business Park as sites for small business service uses.

Landscape Treatment

- The visibility of parking, storage, industrial equipment and operations areas from the street should be minimized through the planting of a landscape screen, consisting of trees and hedges, along street frontages.

- Streets leading to the shoreline access points should receive special landscape treatment.

Honouliuli Industrial Area

Building Height and Mass

- Building heights should generally not exceed 60 feet, especially for buildings of large mass.

- Taller, vertical structures are acceptable when required as part of an industrial operation, but a viewplane study should be conducted for structures over 100 feet in height to determine if they can be sited or designed to minimize visibility from residential, resort and commercial areas, major public thoroughfares and the shoreline.

Roadway Setbacks

- Wastewater treatment structures should be at least 300 feet from the proposed alignments of the Kapolei Parkway, the North-South Road, and any access road that is planned for the reuse of the Barbers Point Naval Air Station. Setbacks for other industrial uses should be as given in the zoning standards.

Landscape Treatment

- The visibility of parking, storage, industrial equipment and operations areas from the street should be minimized through the planting of a landscape screen, consisting of trees and hedges, along street frontages.

Other Industrial Areas

Separation of Use Areas

- Small industrial lots (10,000 square feet or less) for repair services and "incubator" businesses should be located near the commercial core of the City of Kapolei, but not on the principal commercial streets.

- Warehousing and other industrial uses requiring larger lots should be located in industrial parks.

Landscape Treatment

- In small-lot industrial areas, outdoor work and storage areas for vehicles, equipment and supplies should be visually screened from the street and adjacent lots by privacy walls and buildings, with minimal use of landscaping.

- In large-lot industrial subdivisions, this visual screening should be accomplished primarily with landscaped setbacks and street trees.

3.7.3.4 Relation to Urban Land Use Map

Industrial zoning should generally be limited to those areas shown as "Industrial" on the Urban Land Use Map in Appendix A, provided that industrial zoning may be granted for an individual activity which, because it is a public transportation or utility use or because of its unique characteristics, is unable to locate in a planned industrial area.

Heavy industrial uses should be located at Campbell Industrial Park, transitioning to lighter industrial uses closer to the City of Kapolei.

3.7.4 KALAELOA (BARBERS POINT NAVAL AIR STATION)

Kalaeloa (Barbers Point Naval Air Station) is designated as a Special Area, and its development will be guided by a Special Area Plan which should be consistent with the general policies, planning principles and guidelines in the Development Plan.

Barbers Point Naval Air Station (BPNAS) is scheduled to be returned to civilian use by 1999. The Barbers Point Redevelopment Commission, with representatives from the State, City, and the community, is preparing a Local Reuse Master Plan in coordination with the Department of Defense in anticipation of the return of the base to civilian control. The Local Reuse Master Plan is intended to become the Special Area Plan.

Approximately 1,100 acres will remain for military housing and support areas, and another 400 acres will be held for various Federal agency uses as shown on Table 3.4.

The balance will be available for local use, subject to future recommendations of the Barbers Point Redevelopment Commission and the regional vision and general policies detailed in this Development Plan.

3.7.4.1 General Policies

Development of a major new regional public park, and provision of continuous lateral public access along the shoreline are priority reuse options for the BPNAS Local Reuse Plan.

A continuous pedestrian route along the entire Ewa coast should be created. The entire shoreline of the BPNAS should be reserved for public access and recreation after military use of BPNAS ceases.

In addition, building setbacks from the shoreline should be required, a lateral public access easement along the Campbell Industrial Park shoreline should be acquired, and public shoreline pathways should be established at Ko Olina and Ewa Marina.

The road network should be integrated with the regional circulation system.

There should be ample lands devoted to uses that will create long-term jobs for Ewa's residents.

TABLE 3.4: LANDS RETAINED FOR MILITARY AND FEDERAL AGENCY USE AT KALAELOA (BARBERS POINT NAVAL AIR STATION)

AGENCY	PROPOSED USE	ACREAGE
U.S. Army	Sewage sludge	16
Coast Guard	Coast Guard Air Station [1]	48
FAA	Navigation Marker	18
Fish & Wildlife	Wildlife Habitat	253
National Guard	Consolidated Headquarters & Operations	149
U.S. Navy	Beach Recreation Facilities	42
	Landfill & Soil Stockpile/Remediation Facility	85
	Public Works Center Shops	NA
	Existing housing & support areas	1,100
Postal Service	Existing Post Office	NA
	District Headquarters & Warehouse	6
Veterans Admin.	3 Bachelor Enlisted Quarters, Care programs, including homeless	6

Key: NA: Not Available
[1] Only if Reuse Plan provides for operation of an airfield which can support Coast Guard operational requirements

SOURCE: U.S. Department of Defense. Department of the Navy, Pacific Division, Naval Facilities Engineering Command. **Notice of Surplus Determination - Government Property: U.S. Naval Air Station, Barbers Point, Oahu, Hawaii.** October 17, 1995.

3.7.4.2 Planning Principles

The development of Kalaeloa (Barbers Point Naval Air Station) after it is returned to civilian use should be guided by the following planning principles:

- **Regional Growth Pattern.** Conversion of the base to civilian use should be used as an opportunity to integrate the circulation system and land use pattern of the Ewa Plain.

- **Appropriate Scale.** Site planning and landscaping should be used to minimize the visibility of large building volumes and elements from residential areas, commercial and civic districts, and public rights-of-way and parks.

3.7.4.3 Guidelines

Based on the general policies and planning principles, the development of the Kalaeloa (Barbers Point Naval Air Station) after return to civilian control should be directed by the following guidelines:

Parks

- There should be a major regional park within what is presently BPNAS that provides beach recreation and support facilities near the shoreline, other active recreation facilities in mauka areas, and preserves for wildlife habitat, wetlands, and endangered plant colonies.

Coastal Environment

- There should be a minimum building setback of 60 feet and a lateral public access easement along the entire shoreline, with the entry point at the existing military beach recreation center. Where possible, the setback should be expanded to 150 feet.

- The easement should connect to shoreline access easements at the Barbers Point Industrial Area to the west and to public pedestrian pathways at Ewa Marina to the east.

Separation of Use Areas

- Military support housing, airport/industrial facilities, and recreation/wildlife areas should be separated and distinguished from one another through the design of the road pattern and the use of landscape buffers.

Circulation System and Transportation Facilities

- The circulation design should include major roadways connecting the City of Kapolei to the shoreline recreation center and Ewa Marina.

- Bus stop facilities should be provided at the airport, military housing area, and shoreline recreation area.

Landscape Treatment

- The visibility of parking, storage, and airport/industrial operations areas from the street should be minimized through the planting of a landscape screen, consisting of trees and hedges, along street frontages.

- Streets connecting the City of Kapolei to Ewa Marina and the shoreline recreation areas should receive special landscape treatment.

3.7.5 PEARL HARBOR NAVAL BASE (WEST LOCH)

The West Loch Branch of Naval Magazine Lualualei will be the principal site where U.S. Department of Defense ordnance handling and storage for Oahu will be consolidated. The existing Explosives Safety Zone at West Loch will remain, but will not need to be enlarged.

The City should request expansion of limited public access to the shoreline waters of West Loch beyond the West Loch Shoreline Park and should support retaining and enhancing wetland areas along the Pearl Harbor shoreline.

3.7.6 UNIVERSITY OF HAWAII WEST OAHU

This section contains general policies, planning principles and guidelines for development of the University of Hawaii West Oahu.

3.7.6.1 General Policies

The campus should evoke a unique sense of place that distinguishes it as an important civic and cultural institution in Ewa. Projected size is 2,800 students by the end of construction (which is to begin no later than the end of December 2011) and 7,600 students by 2020. The projected 2020 faculty and staff are 800.

The campus should be oriented to support pedestrian access to and transit usage from a major transit node located on the North-South Road. The development of the University of Hawaii West Oahu campus should include plans to provide shuttle bus service to the transit node at the corner of Farrington Highway and the proposed North-South Road. The campus should be designed so that open space areas can be used for flood detention and retention as part of the Kaloi Gulch watershed master plan.

3.7.6.2 Planning Principles

Following are general planning principles to be used as a framework for design of the campus:

Cultural Sensitivity. University development should be environmentally and culturally sensitive to the site and reflective of the Hawaiian culture and of the heritage of Ewa.

Regional Integration. The campus should function as a fully integrated community within the context of the broader regional community. The campus should include housing, support services, community and business facilities, in addition to the required academic facilities.

Community Orientation and Service. The campus should be community-oriented and should serve the Kapolei area and West Oahu as an urban park and cultural center, providing community services, cultural opportunities, and remedial educational opportunities.

Functional and Accessible Design. Campus design should reflect appropriate functional relationships, internal compactness, and accessibility between academic functions and supporting facilities, providing a pleasant and efficient study environment.

Drainage Impacts. A large portion of the campus lies within the Kaloi Gulch watershed. In order to reduce the downstream impact of major storm events, the campus open space system should incorporate flood

detention and retention capability. For example, sports playing fields could be designed to act as flood detention basins during major storm events.

The drainage plans for the Campus should not increase storm water flows or velocity above the design levels used in designing the water retention areas of the Ewa Villages Golf Course and the drainage systems for earlier developments in the Kaloi Gulch watershed.

3.7.6.3 Guidelines

Architectural Forms

- Specific activity areas and structures should be sited and designed to accommodate required internal academic or support relationships. This would include siting of building or facilities so as to promote academic continuity, provide spatial definition to public areas and allow easy access to needed support areas (housing, business/food services, recreation, and parking).

- Buildings and structures should reflect a sensitivity to the local environmental conditions as well as to Hawaiian regional styles.

- Structures should not visually dominate the site. Rather, low rise academic structures with more emphasis on regional architectural forms and human scale should prevail.

Landscape Forms

- Trees and other landscape materials should be used throughout the campus to provide welcome shade and visual relief.

- Street trees and accent plantings should be used to feature gateways, define circulation corridors or enhance special activity areas. The intensity or selection of landscape treatments should be used to further define, identify or buffer various campus land uses.

- Landscape materials should be used which reflect climate conditions, limited water resources, and maintenance issues.

- Use of native/indigenous species should be incorporated into landscape treatments to the greatest extent possible.

Circulation

- Circulation patterns should provide for easily accessed routes to, within, and around the campus. Conflicts between cars, bikes, and pedestrians should be minimized.

- The hierarchy of roadway, bikeway, and pedestrian circulation patterns should be highlighted by a distinctive design treatment for each element of the system.

- Potential visual impacts from vehicle corridors and parking lots should be minimized through appropriate site design and placement.

- Provisions for public transportation with ties to the regional system and transit corridor should be an integral part of the campus plan.

Open Space/Views

- Open space components should be integrated and blended throughout the campus in the form of passive landscape areas, courtyards, mall spaces, and multi-purpose recreation fields or community spaces.
- The internal campus open space system should provide links with the adjoining regional open space systems of the adjacent developments.
- Development of campus gateways and enhancement of internal view corridors should be an integral part of the open space elements within the campus.
- Campus development should preserve and enhance mauka-makai views within major open spaces and through building siting.
- Visual buffering through landscape treatments or building design should occur between conflicting or unsightly functions.

4. PUBLIC FACILITIES AND INFRASTRUCTURE POLICIES AND PRINCIPLES

The purpose of this chapter is to set forth policies and principles to guide planning and construction of proposed public and private public facility projects and infrastructure systems to carry out the vision for future development of Ewa, as described in Chapter 2.

Information on timing and phasing of both planned and proposed infrastructure and public facility projects available during plan preparation is also included. However, each project proposal is only identified and presented conceptually; not on a site specific basis. More detail on the specific need, route alignment, site boundaries, capacity and other specifications for each project, as applicable, will be prepared at the master planning stage which precedes approval of actual development.

As noted in Chapter 5, existing unilateral agreements, zoning and Urban Design Plans will continue to guide development in the area.

4.1 TRANSPORTATION SYSTEMS

This section describes the existing conditions and plans and proposals for development of Ewa's roadways, transit system, and bikeways. (See the Public Facilities Map in Appendix A and the Roadway Network listing below in Table 4.1.) The section concludes with general policies and planning principles to guide future transportation system development in Ewa.

Based on regional planning and transportation analysis done for the Development Plan Revision Program, planned and proposed roadway elements and other transportation system features which may be needed to meet the projected development in Ewa are identified.

4.1.1 EXISTING ROADWAY NETWORK

The major east-west arterials of the Ewa roadway system include:

- The H-1 Freeway which is the major arterial road connecting Ewa with the Primary Urban Center,
- Farrington Highway which, past Kapolei, is the major arterial connecting the Waianae Coast with Ewa, and, between Kapolei and Waipahu, is a secondary east-west route.

North-south roads distribute traffic onto and off of the east-west arterials at several locations. They include:

- Fort Weaver Road which links West Loch, Ewa Villages, Ewa by Gentry, and Ewa Beach with Farrington Highway and H-1,
- Kunia Road which connects to Central Oahu's Schofield Barracks and Wahiawa,
- Fort Barrette Road which runs south from Kapolei to the main entrance to Barbers Point Naval Air Station (BPNAS),
- Makakilo Drive which continues up the hillside from the Makakilo Interchange of the H-1 Freeway, providing the only access to Makakilo, and
- Kalaeloa Boulevard which provides access to Campbell Industrial Park and Barbers Point Harbor via the H-1's Palailai Interchange.

TABLE 4.1: EWA ROADWAY NETWORK

Existing System		
Major East-West Arterials		
o H-1 Freeway		
o Farrington Highway		
North-South Distributors		
o Fort Weaver Road		
o Kunia Road		
o Fort Barrette Road		
o Makakilo Drive		
o Kalaeloa Boulevard		
Planned Extensions	**ORTP #**	**ORTP Phasing**
Existing Roads Improvements		
o Widen Farrington Hwy (4 lanes, Ft. Weaver to Kalaeloa)	C2	1995-2000
o Widen Ft. Barrette Road (4 lanes, H-1 to Kapolei Pkway)	S10	1995-2000
o Widen Ft. Weaver Road/Kunia Road (6 lanes, H-1 to Renton Road)	S20	2001-2005
o Widen Kalaeloa Boulevard/Extend Hanua Street to H-1	S21	2001-2005
o Widen Farrington Hwy (6 lanes, H-1 terminus to Nanakuli)	S31	2006-2020
o HOV median lane from Makakilo to Waiawa Interchange	HOV-7	2006-2020
New Roads		
o Kapolei Parkway	C5	1995-2000
o North-South Road	S19	2001-2005
Interchange Improvements		
o Kunia Interchange	S1	1995-2000
o Makakilo Interchange	S2	1995-2000
o Palailai Interchange	S17	2001-2005
New Interchanges		
o Kapolei Interchange	S27	1995-2000
o North-South Road Interchange	S19	2001-2005
o Makaiwa Hills	S32	2006-2020
Additional Elements		
o Link Fort Barrette Rd. and Kalaeloa Regional Park (BPNAS)		
o Extend from North-South Rd. into Kalaeloa Regional Park		
o Develop additional north-south roads and a mauka frontage road near the City of Kapolei		
o Extend Geiger Road to link Fort Barrette Road and North-South Road		
o Link Campbell Industrial Park with Geiger Road		
o Develop an additional north-south road in East Kapolei		

SOURCE: Identification numbers and phasing from 2020 Oahu Regional Transportation Plan, November 1995

According to the *2020 Oahu Regional Transportation Plan* (November 1995), the existing transportation system in Ewa has sufficient capacity for current traffic volumes during peak hour traffic, but experiences congested conditions because of bottlenecks and lack of capacity on the corridor from Pearl City to Downtown Honolulu. Traffic volume on the H-1 at Waikele is projected to increase by over 60% by 2020, while traffic on the H-1 by Aiea is projected to increase by 10%.

As noted in Section 4.1.6, the substantial development of Secondary Urban Center jobs (from 17,000 jobs in 1990 to over 64,000 jobs by 2020) is projected to increase the number of Ewa residents who work in the area.

However, it is also projected that the number of commuters traveling to the PUC from Ewa and Central Oahu will still increase, although at a lower rate than would occur if development of the Secondary Urban Center was not supported.

A summary of transportation analysis and need assessments done in preparing this document is provided on page 2-33 and 2-34 of the Ewa Development Plan Report, the technical report prepared by the consultant team for this project.

4.1.2 PLANNED EXTENSIONS OF THE ROADWAY NETWORK

Planning and development of major roadways is the shared responsibility of the State Department of Transportation and the City Department of Transportation Services. Planning and use of federal transportation funds is coordinated through the Oahu Metropolitan Planning Organization (OMPO), a joint City-State agency.

OMPO recently prepared the *2020 Oahu Regional Transportation Plan* based on year 2020 traffic volumes projected to be generated by land uses approved under the previous Development Plan Special Provisions and Land Use Map. In addition, in Ewa, a consortium of landowners and developers prepared the *Ewa Region Highway Transportation Master Plan* (1992) as part of a process to determine what Ewa highway improvements will be needed, and how much of the costs each developer is to pay. Under existing Unilateral Agreements, Ewa developers and landowners have agreed to finance their fair share of development of the roads. The *Master Plan* is being updated, along with a study of the North-South Road, and analysis of methods for financing these improvements.

Roads listed in the Ewa Region Highway Transportation Master Plan and the 2020 Oahu Regional Transportation Plan will be required by 2020 to properly serve the anticipated developments. (The Master Plan has not yet been approved by the State and the City.)

The two plans show major elements of the future Ewa roadway network. These major improvements include:

- Kapolei Parkway which is planned as a major east-west corridor, connecting the eastern parts of Ewa with the City of Kapolei and employment areas to the west,
- A new North-South Road which will link Kapolei Parkway with Farrington Highway and the H-1 Freeway and extend on mauka of the H-1 Freeway interchange to become part of Makakilo Drive,
- Improvements to existing H-1 Freeway interchanges at Palailai, Makakilo, and Kunia,
- New H-1 Freeway interchanges at Kapolei and Makaiwa Hills, and
- Extension of Hanua Street parallel to Kalaeloa Boulevard to enhance truck access between the H-1 Freeway and Campbell Industrial Park.

Recognition of these major improvements to future roadway networks for Ewa in no way implies Council approval of these projects. These projects will have to be approved through the CIP process or through the zoning process.

4.1.3 ADDITIONAL ELEMENTS OF THE ROADWAY NETWORK

The planned development of East Kapolei and the return of Barbers Point Naval Air Station to civilian use will open additional areas for use and increase transportation needs beyond the levels planned for in the **2020 Oahu Regional Transportation Plan**.

Additional east-west and north-south roadways will be needed to enhance movement between the various parts of the Ewa region and to provide improved access to activity centers such as Ewa Marina and the Kalaeloa Regional Park (at BPNAS), including:

- An improved roadway link between Fort Barrette Road and the Kalaeloa Regional Park to provide access to the shoreline and the park for residents of the Kapolei-Makakilo area,
- Extension from the North-South Road south of Kapolei Parkway into the Kalaeloa Regional Park to provide a second access to the Park for residents of East Kapolei and staff and students of the UH-West Oahu campus,
- Development of an east-west collector roadway system which connects developments on both sides of North-South Road in an efficient circulation pattern,
- Development of additional north-south roads and a mauka frontage road to improve circulation between the City of Kapolei and the freeway, Makakilo and Makaiwa Hills,
- Extension of Geiger Road to provide a direct link between Fort Barrette Road and the North-South Road,
- Development of a roadway linking the western part of Ewa Marina and a road within the eastern boundary of BPNAS which connects to Geiger Road,
- Development of an east-west roadway linking Campbell Industrial Park with Geiger Road, and
- Development of at least one additional north-south road between East Kapolei and Farrington Highway, east of the North-South Road.

The need for these roads has been established only at the conceptual stage, and further study, planning and approvals will be required to establish need, appropriate route, capacity, and other characteristics.

4.1.4 TRANSIT

With population growth, the City should increase transit service in Ewa, in order to enhance circulation among Ewa communities and between Ewa and the adjacent Waianae and Central Oahu areas, and to provide suitable service for peak-hour commuting.

4.1.4.1 Bus Service

Bus service is provided through the Department of Transportation Services, which currently contracts with Oahu Transit Services (OTS) for operation of TheBus. A second vendor operates the Handi-Van system. As

of 1994, OTS operated a fleet of 495 buses, programmed for expansion to 525 buses. About 35 buses were assigned to TheBus's Ewa Service Area, which is identical to the Ewa Development Plan area.

In 1996, there are four bus routes serving Ewa throughout the entire day:

- Ewa Mill - Honolulu No. 48
- Ewa Beach - Honolulu/Ala Moana No. 49
- Makakilo - Honolulu/Ala Moana No. 50
- Makaha - Honolulu/Ala Moana No. 51

In addition, during peak-hour commuting, there are five express bus routes:

- Ewa Beach Express No. 91
- Makakilo City Express No. 92
- City of Kapolei/Campbell Industrial Park Express No. 94
- Ewa Gentry Express No. 101
- Kapolei Express No. 102

The **Comprehensive Bus Facility and Equipment Requirements Study**, published in 1994 by the Honolulu Public Transit Authority, examined bus system expansion and financing needs for the period 1994 - 2006. Assuming future expansion of the fleet from 525 to 650 buses, the study showed an increase in buses assigned to the Ewa Service Area from 35 to 88, of which 45 are expected to be articulated (high-capacity) buses. The additional buses would be used to increase capacity and frequency of service, as well as to add new routes. As the fleet expands its service, public review and Council approval will be necessary.

OTS currently operates two "divisions" from bus maintenance facilities located in Kalihi-Palama and Halawa. With growth in service and in the bus fleet, a third division will be needed to serve west Oahu and will be located at a third maintenance facility at Manana in the Pearl City area.

The **Comprehensive Bus Facility and Equipment Requirements Study** also addresses the need for "transportation centers" and park-and-ride facilities, although it makes no recommendations on specific sites in the Ewa area. Transportation centers are bus transfer points having a protected environment for waiting passengers, like that on the mauka side of Ala Moana Center. Park-and-rides are special parking lots where commuters can park their cars and continue their commute by bus.

The Department of Transportation Services has currently identified and proposed for development two park-and-ride facilities in Ewa, one in the future civic center area of the City of Kapolei, and another further east, near the future North-South road/Kapolei Parkway intersection. Other sites are expected to be identified and proposed for development as new communities arise in areas that have not yet started to develop, especially if they are at key points along the future route of the proposed rapid transit system.

Policies, planning principles, and guidelines in this Development Plan support the establishment of transit service throughout Ewa and creation of linkages feeding into transit nodes along the future rapid transit corridor (See 4.1.4.2 below).

4.1.4.2 Planned Rapid Transit Corridor

As shown on the Public Facilities Map in Appendix A, a rapid transit corridor is planned to connect the City of Kapolei with Waipahu and onward to the Primary Urban Center. The corridor could provide for both an Ewa shuttle service, which could travel back and forth on the transit corridor between Ko Olina, the City of Kapolei, the UH West Oahu campus and Waipahu, and a commuter service, which could provide peak-hour express bus

service to and from the Primary Urban Center. In peak-hour commuting, the corridor could carry express bus service, or even higher-speed dedicated transit service.

By connecting to the Primary Urban Center via Waipahu, the corridor could provide for a future high-speed connection between the Kapolei campus of the University of Hawaii at West Oahu and Leeward Community College, Honolulu Community College, and the University of Hawaii at Manoa.

The Ewa rapid transit corridor is planned to run from Waipahu along the Farrington Highway right-of-way, turning south at the North-South Road and west again in the Kapolei Parkway right-of-way to the City of Kapolei. The corridor could eventually extend to Barbers Point Harbor and a turn-around/maintenance facility could be sited in the Kapolei Business Park.

Developments along the proposed transit corridor are being required to set aside appropriate sized right-of-way and under existing UAs, the land will be donated by Campbell Estate to the City at the time that a rapid transit system is developed for Ewa.

Land has been set aside for a rapid transit right-of-way in the median of Kapolei Parkway and in the North-South Road corridor. Campbell Estate has made a commitment to set aside additional land along Farrington Highway between the North-South Road and Fort Weaver Road. The Farrington Highway right-of-way through Waipahu has adequate land to accommodate rapid transit. (The right-of-way for an at-grade separated rapid transit system would be 28 feet while only eight feet would be required if the system were elevated.)

Land has been set aside in the City of Kapolei for a transit station/bus terminal/park-and-ride facility, and provisions should be made for transit stations/park-and-ride facilities at each of the transit nodes along the rapid transit corridor. (A 75-foot right-of-way would be required for each transit station.) In addition, 25 acres are being reserved for a future rapid transit maintenance yard.

High density residential and commercial development should be permitted within a one-quarter mile radius (15 minutes walking distance) around the transit station/park-and-ride facility site at the center of the transit node. The objective is to create a land use pattern that would allow residents to minimize use of the private automobile and encourage use of transit for longer trips and walking or biking for short trips.

4.1.5 BIKEWAY SYSTEM

The **Kapolei Area Bikeway Plan**, published by Campbell Estate in 1991, establishes a comprehensive bikeway network to serve the Ewa Plain. The network would include 56 miles of bikeway facilities, including bike paths (separated from the roadway), bike lanes (four- to six-foot lanes) and bike routes (shared curbside vehicle lane, with minimum 12-foot width).

The Kapolei Area Bikeway Plan (KABP) is part of the City of Kapolei Urban Design Plan, which was adopted by the City Council in 1995. The KABP covers all of Ewa except for military bases in the area. Elements of the KABP have been adopted by the State Department of Transportation as part of the State bikeway plan, Bike Plan Hawaii (1994). This Plan includes all the projects found either in the KABP or the State's Bike Plan Hawaii.

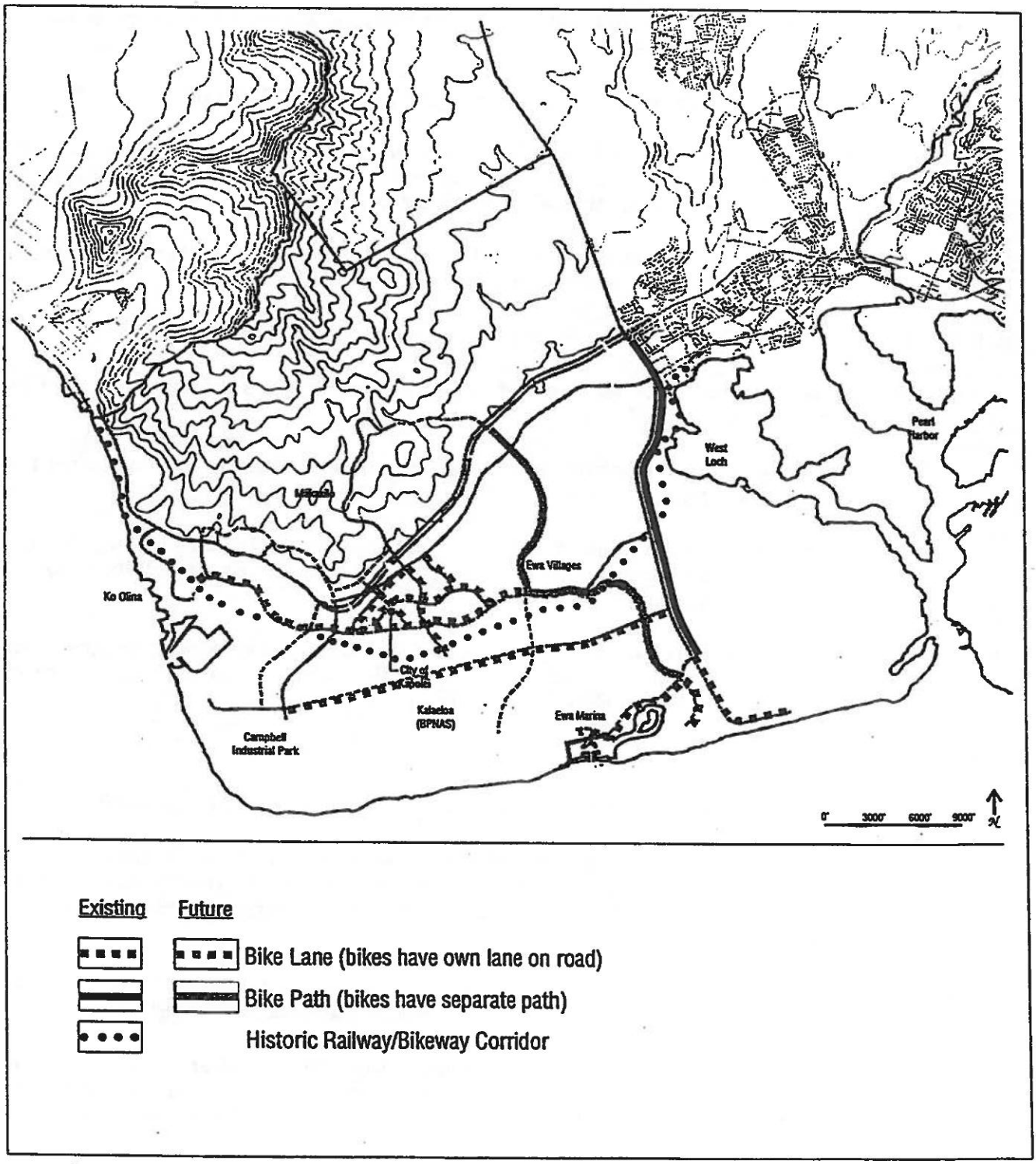
As shown in Exhibit 4.1, major bike paths should run along the OR&L right-of-way and Kapolei Parkway and along the North-South Road and Fort Weaver Road. Bikeways should be incorporated in other major roadways, and there should be an extensive network of bike lanes within the City of Kapolei and Kapolei Villages.

4.1.6 GENERAL POLICIES

The following general transportation systems policies support the vision for development of Ewa.

Adequate Access and Services. Before zoning approval is given for new residential and commercial development in Ewa, the Department of Transportation Services should either: (1) indicate that adequate transportation access and services can be provided with existing facilities and systems, or (2) recommend conditions that should be included as part of the zone change approval in order to assure adequacy.

Exhibit 4.1
Ewa Bikeway System



Transportation System Functions. To support Ewa's role as the site for the Secondary Urban Center and a major growth area for new residential and employment development, its transportation system should:

- Provide adequate access between residences and jobs, shopping, and recreation centers in Ewa as development occurs;
- Provide improved access to and from adjacent areas, especially Central Oahu; and
- Provide adequate capacity for major peak-hour commuting to work in the Primary Urban Center. (Although the share of residents who will both live and work in Ewa is projected to increase from 17% to 44% by 2020, a majority of residents will still commute to jobs outside the region.)

Improved Linkages. Additional routes, as noted in Section 4.1.3 of this Plan, should be created between the various parts of the region, including to and across BPNAS after it is returned to civilian control.

Reduction in Automobile Use. Reliance on the private passenger vehicle should be reduced by:

- Provision of circulation systems with separated pedestrian and bicycle paths and convenient routes for public transit service,
- Use of more traditional "grid" patterns for street systems in new development areas to facilitate bus routes and encourage pedestrian travel,
- Provision of supporting facilities and amenities for pedestrian, bicycle, and public transit use. The use of bike trails, bicycle racks at commercial centers, bicycle storage facilities at employment centers as well as bus shelters at bus stops will be encouraged.
- Acquisition of a dedicated rapid transit right-of-way prior to development, and support for high-density and high-traffic land uses along the rapid-transit corridor, especially within a quarter-mile of centers of the transit nodes, subject to City Council approval of any system.

4.1.7 PLANNING PRINCIPLES

Because of its generally even, gradually sloping terrain, Ewa offers decided advantages for transportation.

- It provides an opportunity to create multiple linkages and routes between the various parts of the region. This advantage is enhanced by the planned closing of the Barbers Point Naval Air Station, which will return the area to civilian use and thereby allow for increased road linkages to and across former Naval Air Station lands.
- The terrain allows for relatively less expensive development of a dedicated transit right-of-way. The flat terrain also increases the feasibility of constructing a rapid transit system on that right-of-way.
- Both the terrain and the sunny, low rainfall climate enhance bicycling as an alternative form of transportation as well as for recreation. An improved environment for bicycling and walking also improves the potential for high transit ridership. (See the discussion of the Kapolei Area Bikeway Plan above in Sec. 4.1.5.)

Planning principles and guidelines addressing residential and commercial land uses, set forth in Chapter 3, Sections 3.6 and 3.7 above, provide substantial guidance toward enhancing pedestrian, bicycle and transit modes of transportation.

The following principles should guide the development of a multi-modal transportation system for Ewa:

- **Comprehensive Roadway Network.** The roadway system should be designed to provide multiple routes for travelling among the various residential communities and activity centers of Ewa, thereby lending variety to travel within the region and promoting communication among its communities. Network designs for communities should take on more of a grid pattern, increasing intersections between collector streets.

  The design should also increase connections between parallel major collectors and arterials - e.g., between North-South Road and Fort Weaver Road - rather than relying primarily upon loop roads to feed the major roadways. Planning for East Kapolei and for the reuse of Barbers Point Naval Air Station are important opportunities for creating such connections.

- **Land Use Planning Anticipating Rapid Transit.** Key to the vision for Ewa is reservation of a rapid transit corridor prior to development and the planning of high-density and high-traffic land uses along the corridor. This strategy will contribute to the feasibility of developing a high-speed transit line and will result in a more mobile, less automobile-dependent community. Planning for all the communities along the proposed transit corridor on Farrington Highway, North-South Road, and Kapolei Parkway should reflect the desire to establish a rapid transit corridor with high density residential and commercial nodes located at regular intervals.

- **Transit-Oriented Community Street Systems.** Circulation systems within residential communities and commercial centers should emphasize connections between north-south and east-west streets and accessibility from residential streets to bus routes, parks, schools and commercial centers. Circulation systems should be designed to facilitate bicycle and pedestrian travel, to increase transit use, and to reduce dependence on automobile travel.

  See Chapter 3, Sections 3.6 and 3.7, for more detailed planning principles and guidelines for circulation in residential communities and commercial centers.

- **Community-Level Street Standards.** Standards for public streets within residential communities and commercial centers should be revised to support and improve pedestrian and bicycle travel and on-street parking. While average motor vehicle speed may be reduced, safety and enjoyability for pedestrians and bicyclists would be increased, and greater efficiency in land use, reduced constructions costs, and improved street function may occur.

4.2 WATER ALLOCATION AND SYSTEM DEVELOPMENT

In 1987, the State enacted the State Water Code in order to protect, control, and regulate the use of the State's water resources for the benefits of its people. Under the Code, the City is responsible for preparing the water use and development plan for the City and County of Honolulu.

This plan, called the **Oahu Water Management Plan** (OWMP), is prepared by the Planning Department with the assistance of the State Commission on Water Resource Management and the Board of Water Supply, and approved by the City Council following extensive public review and comment. The OWMP was adopted by the State Commission on Water Resources and the City Council in 1990. The **Technical Reference Document (TRD)** for the OWMP is currently being revised to update supporting data, analyses, and conclusions to reflect the closing of Oahu Sugar Company and Waialua Sugar Company and more recent data and analytical review. Future revisions to the document shall be submitted to the Council for its review and approval.

The Board of Water Supply evaluated the water development needs of the existing and new residential and commercial (including retail, office, resort, recreational, and industrial) development likely by 2020 as a result of implementation of the Development Plan.

The Board of Water Supply projects that an additional 35 million gallons per day (mgd) of **potable** (or drinkable) water will be needed in Ewa by 2020 to meet projected growth in residential and commercial demand. In addition, long-term demand for **nonpotable** water for existing and new urban irrigation and other urban purposes is estimated to be approximately 26 mgd. Agricultural demand for non-potable water for the 3,000 acres of agricultural land in Ewa protected from development by this plan could be as much as 10 mgd (based on recent testimony before the State Commission on Water Resource Management). Meeting this demand will require reallocation of water within the island-wide system, as well as development of new sources.

As shown below in Table 4.2, the Board of Water Supply has identified potential sources of potable and nonpotable water to meet the projected demand in Ewa through 2020. These sources will be pursued as part of the Board's development and operation of an integrated islandwide water system.

The water management strategy called for in the **Oahu Water Management Plan** is for on-going groundwater source development coupled with efforts to increase water use efficiency, water conservation, and continued development of alternative sources of water.

TABLE 4.2: POTENTIAL SOURCES OF POTABLE AND NONPOTABLE WATER FOR EWA AND CENTRAL OAHU

POTABLE GROUNDWATER RESOURCES

Ground Water Source	Estimated Source Yield (Million Gallons per Day)
1. Waipahu Wells III	3.00
2. Ewa Shaft	15.00
3. Kunia Wells IV	2.00
4. Waiawa Wells (1)	9.00
5. Ekahanui Wells	2.00
6. Waipahu Wells IV	3.00
7. Kunia Wells III	3.00
8. Waipahu Wells II Addition	1.50
9. Mililani Wells IV	3.00
10. Kunia Wells II Addition	1.50
Total Estimated Source Yield (2)	43.00

ALTERNATIVE WATER RESOURCES

Source	Available Resource (Million Gallons Per Day)	
	Minimum Estimate	Maximum Estimate
Potable:		
1. Ewa Desalinization Plant	10	25
Nonpotable (3)		
2. Nonpotable Caprock (4)	NA	NA
3. Surface Nonpotable Water	2	3
4. Wastewater Nonpotable Reuse	5	13
5. Waiahole Ditch	0	28
6. Pearl Harbor Springs Nonpotable	16	20
Total Nonpotable	23	64

Notes:

NA Not Available
(1) Based on the Waiawa Water Master Plan.
(2) Source construction is contingent on the availability of sustainable yield.
(3) Nonpotable resources will be needed for agricultural and urban uses.
(4) Ewa Caprock aquifer sustainable yield is being reevaluated.

Pearl Harbor aquifer sustainable yield will decrease due to Oahu Sugar Company's close and requires reevaluation. Specific source capacities are only estimates. Allocations of groundwater and surface water sources require the approval of the State Commission on Water Resource Management.

Source: Board of Water Supply, 1996

4.2.1 GENERAL POLICIES

The following general policies should be followed in developing Ewa potable and nonpotable water systems to meet the projected demand.

Adequacy of Water Supply. Before zoning approval is given for new residential or commercial development in Ewa, the Board of Water Supply should either indicate that adequate potable and nonpotable water is available or recommend conditions that should be included as part of the zone change approval in order to assure adequacy.

Dual Transmission Lines. Where required, developments should have dual water lines to allow conservation of potable water and use of nonpotable water for irrigation and other appropriate uses. Such requirements shall be determined during review of project master plans for new developments and approval of zoning applications.

Development and Allocation of Potable Water. The State Commission on Water Resource Management has final authority in all matters regarding administration of the State Water Code. Under that authority, the Board of Water Supply should coordinate development of potable water sources and allocation of all potable water intended for urban use on Oahu. State and private well development projects could then be integrated into and made consistent with City water source development plans.

Use of Nonpotable Water. An adequate supply of nonpotable water should be developed for irrigation and other suitable uses on the Ewa Plain in order to conserve the supply of potable water and to take advantage of dual water systems constructed by Ewa developers.

The Pearl Harbor aquifer is the most cost effective and accessible water resource of potable quality and it is needed to support the existing and future domestic potable water uses described in the development plans. To minimize the risk of impacts to our precious potable water sources, the use of reclaimed water ("reclaimed wastewater effluent") and brackish waters as nonpotable irrigation sources in the coastal caprock area such as the Ewa Plain should be given high priority. Significant demand exists for nonpotable water for golf courses, landscape irrigation and industrial uses on the Ewa Plain. In addition to the compatibility of the source to the demand in the area, the infrastructure to distribute the reclaimed water in that area is being planned. Use of reclaimed water and brackish water should, therefore, focus on meeting demand in the Ewa Plain where there are no adverse consequences to the drinking water resources.

Experiences with increasing chloride, nitrate and pesticide contamination of groundwater indicate that activities on the surface of the land can have a detrimental effect on the quality of drinking water. Nonpotable water used above Pearl Harbor aquifer should be low in total dissolved solids to protect the quality of drinking water withdrawn from wells located down-gradient of the application.

Use of Waiahole Ditch Water. A sufficient amount of water is needed to meet the diversified agricultural needs for Ewa and Central Oahu along with high quality recharge of the Pearl Harbor aquifer. A number of potential sources are identified in Table 4.2, including: caprock, surface water, spring waters, Waiahole Ditch Water and wastewater effluent. The amount of water available and the potential use of each of these sources varies according to location. The State Commission on Water Resource Management should consider all sources of water in making allocations.

Water Reclamation. The City will reclaim and distribute wastewater effluent, provided that paying customers can be found for the nonpotable water. No additional costs will be borne by sewer users to subsidize private users of recycled effluent.

Under the City's agreement through a Consent Decree with the U.S. Environmental Protection Agency and the State Department of Health, the City plans to reclaim and use up to 10 mgd of Oahu's wastewater by 2001.

Construction of the secondary treatment unit at the Honouliuli Wastewater Treatment Plant has been completed. The facility is capable of providing 13 million gallons per day (mgd) of undisinfected secondary treated reclaimed water (R-3 quality).

In Fiscal Year 1997-98, the City plans to build a pilot project at Honouliuli to study the potential for aquifer recharge with disinfected secondary treated reclaimed water (R-2 quality) and to evaluate the resulting water quality impacts within the lower Ewa plain region. The R-3 secondary treatment facility at Honouliuli will be upgraded to an R-2 facility when the pilot project is ready to begin. The pilot project will have a capacity of 5 to 6 mgd.

If the pilot project indicates the water quality of the Ewa caprock aquifer can be improved with effluent recharge with no detrimental impacts to near shore waters, the pilot project will be expanded to provide 13 mgd of recharge, providing that customers can be found to pay for the capital costs of the distribution system and the cost of operating and maintaining the facility and distribution system.

Integrated Resource Management. Management of all potable and nonpotable water sources, including groundwater, stream water, storm water, and effluent reuse should be integrated through amendments to the Oahu Water Management Plan and future Integrated Resource Management plans which will require Council approval and adequate public review, following City development of plans and adoption of an appropriate management process.

4.3 WASTEWATER TREATMENT

The Department of Environmental Services estimates treatment/disposal capacity at the Honouliuli Wastewater Treatment Plant will need to be increased from existing capacity for primary treatment of 38 million gallons per day (mgd) to almost 51 mgd by 2020 to meet projected population and economic growth in Ewa and Central Oahu resulting from implementation of the revised Development Plans. In addition, the capacity of specific sewer lines and pump stations will need to be increased.

4.3.1 GENERAL POLICIES

All wastewater produced by new developments in Ewa should be connected to a regional or municipal sewer service system.

Where feasible, effluent should be treated and used as a source of nonpotable water for irrigation and other uses below the Underground Injection Control line of the State Department of Health and the "No-Pass" Line of the Board of Water Supply. As noted above, the Department of Environmental Services has made a commitment to the U.S. Environmental Protection Agency and the State Department of Health to reclaim and use up to 10 million gallons a day (mgd) of wastewater islandwide by 2001.

Wastewater treatment plants should generally be located in areas shown as planned for industrial use and away from residential areas shown on the Urban Land Use Map in Appendix A. Existing treatment plants are shown on the Urban Land Use Map and the Public Facilities Map in Appendix A. A City review and approval process, such as the Plan Review Use process, which provides adequate public notice and input, complete technical analysis of the project, and approval by the City Council, shall be required for any major new private wastewater treatment plant. Other system elements, such as pump stations and mains, should not require such comprehensive review and policy approval.

4.4 ELECTRICAL POWER DEVELOPMENT

The Hawaiian Electric Company forecasts that increased demand and the proposed retirement of the Honolulu Power Plant from service will create a need for additional islandwide power generation capacity by 2020. Potential sites in Ewa for additional generating units include Campbell Industrial Park and Kahe Point.

4.4.1 GENERAL POLICIES

Major system improvements—such as development of a new power generating plant and/or major new transmission lines—should be analyzed and approved based on islandwide studies and siting evaluations. Strong consideration should be given to placing any new transmission lines underground.

Electrical power plants should generally be located in areas shown as planned for Industrial use and away from Residential areas shown on the Urban Land Use Map in Appendix A. Existing power plants are shown on the Urban Land Use Map and Public Facilities Map in Appendix A. Any proposed major new electrical power plant or proposals for a new above-ground or underground transmission corridor carrying voltages of 138kV or greater shall be considered through a City review and approval process, such as the Plan Review Use process, which provides public review, complete analysis, and approval from the Department of Land Utilization and the City Council.

Other system elements, such as substations and transmission lines, are not shown on the Map and should be reviewed and approved administratively.

4.5 SOLID WASTE HANDLING AND DISPOSAL

Two major solid waste handling and disposal facilities are located in Ewa. The H-Power plant at Campbell Industrial Park is operating at maximum capacity, receiving over 600,000 tons of solid waste each year. The Waimanalo Gulch Sanitary Landfill, located between the proposed Makaiwa Hills residential development and Kahe Valley, is the major active waste disposal site on Oahu. It will run out of capacity within ten to twenty-five years.

The **Solid Waste Integrated Management (SWIM) Plan** prepared by the Department of Public Works and adopted by the City Council in 1995 identified existing landfills which could be expanded and potential sites for developing new landfills to provide new capacity. The Waimanalo Gulch was identified as having potential for expansion. Ewa sites for new landfills identified in the Plan included the mauka part of Kahe Valley, a site within the West Loch Magazine Blast Zone, and a site in East Kapolei.

4.5.1 GENERAL POLICIES

The East Kapolei site identified in the **SWIM Plan** should not be developed as a landfill. It is in an area planned for residential use and is adjacent to the University of Hawaii West Oahu campus.

Siting and/or expansion of sanitary landfills should be analyzed and approved based on islandwide studies and siting evaluations.

4.6 DRAINAGE SYSTEMS

Low-lying parts of the Ewa Plain are subject to flooding during intense rainstorms. Flood control has typically been provided for urbanized areas through the development of concrete-lined channels to convey stormwaters to the ocean.

Discharge of floodwaters to the ocean, however, is a major source of non-point source pollution of nearshore waters, negatively affecting coral growth, fish populations and use of the shoreline for swimming, surfing, and other types of ocean recreation.

The federal government has initiated a major program to reduce non-point source pollution, mandating response by the State and the counties. The City requires retention/detention facilities adequate for a two-year frequency/24-hour duration storm to be provided on site, but the required capacity is only for the amount of stormwater generated on site. In many watersheds, however, undeveloped mountain areas generate a disproportionately large share of the total stormflow, and no party is responsible for mitigating the environmental impact.

Concrete-lined drainage channels have other negative environmental impacts, including disruption of lateral shoreline access, beach erosion downdrift of channel mouths, and visual blight.

Drainage improvements are planned for:

- A major new system to drain Makaiwa Hills, Kapolei Business Park, and the industrial areas closest to the Barbers Point Deep Draft Harbor;
- Expansion of the channel at the western edge of BPNAS to provide additional capacity for the City of Kapolei;
- A system to drain the West Loch Drainage Basin, serving Ewa by Gentry and development in East Kapolei; and
- A system to drain the Kaloi Gulch Drainage Basin.

The **Makaiwa Hills system** will have detention basins mauka of the H-1 Freeway and a 120-foot-wide concrete-lined channel to convey stormwaters to an ocean outlet just south of Barbers Point Harbor. It is being constructed by Campbell Estate. The Estate is also funding the expansion of the **existing channel on the western boundary of the Barbers Point Naval Air Station.**

Drainage improvements in the **West Loch Drainage Basin** must be constructed to handle stormwater runoff from existing and proposed projects located in the basin. These projects include the City's West Loch residential project, Phase I of the Ewa by Gentry residential project, and the proposed East Kapolei master-planned community project.

The drainage plans for Phase I of the Ewa by Gentry East project call for a grass-lined drainage channel running immediately east of the project's boundary. The channel would terminate at a detention basin that will be immediately makai of the Honouliuli National Wildlife Refuge. During heavy rainstorms, stormwater runoff exceeding the capacity of the detention basin would be directed around the wildlife refuge for discharge into Pearl Harbor's West Loch.

The **Kaloi Gulch Drainage Basin** is one of the larger drainage basins in the region. It encompasses an area of approximately 7,140 acres, and has a peak design flow of approximately 11,500 cfs (cubic feet per second). Historically, the drainage pattern in this basin has flowed from the Waianae Mountain Range above Makakilo through the Kaloi Gulch toward the ocean terminating on Haseko's Ewa Marina property. Floodwaters typically spread out in sheet flows through the sugarcane fields below Farrington Highway.

Drainage flow through the Kaloi Gulch basin, however, has been constrained by the elevation of the OR&L right-of-way which forms a man-made barrier that impedes stormwater runoff. Because of this constraint, stormwater flows have been forced into a narrow drainage culvert between Tenney and Varona Villages in the Ewa Villages. During periods of heavy rainstorms, this has caused flooding in the Tenney and Varona Villages area.

The Ewa Villages and Ewa by Gentry projects are handling drainage within their projects through the development of golf courses. The golf courses provide detention and retention of storm waters and will adequately meet the Department of Public Works' drainage and environmental requirements for stormwater runoff.

Other proposed urban development projects in the basin, including the University of Hawaii West Oahu and the Ewa Marina project have not yet received City approval for their drainage master plans.

The drainage system serving the **Villages of Kapolei**, which consists of golf course retention and disposal of stormwater into injection wells and a large ditch near the Barbers Point Naval Air Station boundary, may need to be augmented in the future.

A proposal is being considered by the Barbers Point Redevelopment Commission which would create a drainage system through the Barbers Point Naval Air Station lands for waters from both the Villages of Kapolei and Kaloi Gulch drainage basins.

See Exhibit 4.2 for the location of Ewa Drainage Basins.

4.6.1 GENERAL POLICIES

Drainage system design should emphasize control and minimization of non-point source pollution and the retention and/or detention of storm water on-site and in appropriate open space and wetland areas.

Storm water should be viewed as a potential irregular source of water for recharge of the aquifer which should be retained for absorption rather than quickly moved to coastal waters.

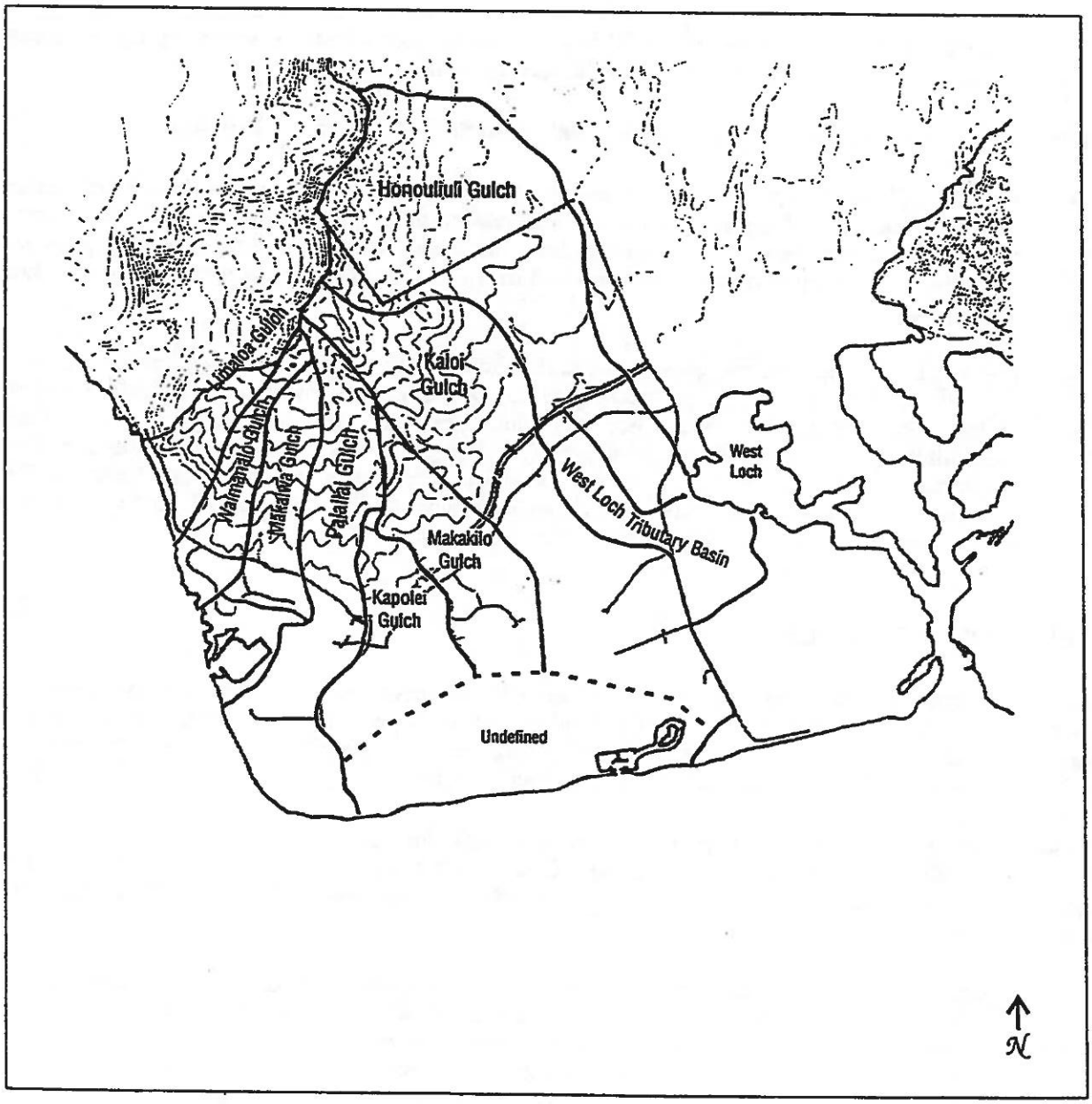
Natural and man-made vegetated drainageways and retention basins should be the preferred solution to drainage problems wherever they could promote water recharge, help control non-point source pollutants, and provide passive recreation benefits.

4.6.2 PLANNING PRINCIPLES

Principles to guide the development of Ewa drainage systems include:

- **Retention and Detention.** Public and private agencies should employ methods of retaining or detaining storm water for gradual release into the ground as the preferred strategy for management of storm water. Where feasible, any open space, including parking lots, landscaped areas, mini and community parks, and public and private golf courses should be used to detain or infiltrate storm water flows to reduce their volume and runoff rates and the amounts of sediments and pollutants transported.

Exhibit 4.2
Ewa Drainage Basins Map



- **Relation to the Regional Open Space Network.** To the extent possible, the developers should integrate planned improvements to the drainage system into the regional open space network by emphasizing the use of retention basins, creation of passive recreational areas, and recreational access for pedestrians and bicycles.

  Natural gulches on the slopes of the Waianae Range foothills which are within the Urban Growth Boundary should be preserved as part of the open space network.

The following principles apply specifically to development within the Kaloi Gulch drainage basin.

- **Key Role of Ewa Marina.** The City supports timely development of the Ewa Marina as a key element needed to mitigate drainage impacts in the Kaloi Gulch watershed during major storms. The marina's role as a storm water storage and detention basin has been acknowledged and included in previously approved environmental impact statements and land use approvals for projects in the Kaloi Gulch watershed.

- **Relation to the Ewa Village Master Plan and Other Previously Approved Developments in the Basin.** Solutions to handling drainage problems on lands above Ewa Villages must be compatible with the drainage design of the Ewa Villages Master Plan and other developments in the Kaloi Gulch drainage basin which have already been approved. The Ewa Villages drainage design assumes that runoff will not exceed existing levels received from sugarcane fields north of the golf course, will enter the Ewa Villages golf course water retention areas through a number of dispersed channels, and will not be at velocities which would scour out the golf course water retention areas.

4.7 SCHOOL FACILITIES

Statewide, the State Department of Education (DOE) faces an enormous shortfall in funding to meet projected needs for new classrooms. As a result, the DOE is asking for developer "fair-share" contributions, exploring alternative school financing options such as lease/purchase agreements, and seeking to increase the number of schools operating year-round and with multi-tracking or double shifts.

As shown in Table 4.3, the DOE has projected a need by 2020 for nine new elementary schools, two new intermediate schools, and at least one new high school in Ewa. An additional high school will be needed after 2020. (Needs estimates could change if estimates of housing production and density or schools operations policies and funding are revised.)

Conceptual locations of two new intermediate schools and two new high schools are shown on the Public Facilities Map in Appendix A. Elementary schools are not mapped because their sites are of community rather than regional concern and should be determined as part of a master planning and design process. Sites have been reserved for two of the elementary schools, one intermediate school, and one high school. (Minimum site size for elementary schools is eight acres, for intermediate schools is 18 acres, and for high schools is 50 acres.)

4.7.1 GENERAL POLICIES

The State Department of Education should review and recommend on the adequacy of school facilities, either at existing schools or at new school sites to be made available when the development is completed.

Developers should pay their fair share of all costs needed to insure provision of adequate school facilities for the children living in their developments.

TABLE 4.3: PLANNED SCHOOLS IN THE EWA DEVELOPMENT PLAN AREA

School	Site Reserved	Opening Date
Elementary Schools		
Kapolei [1]	X	1994
Ewa Gentry	X	1996
Ewa Marina [2]		2000-2003
Makaiwa Hills or Ko Olina [2]		2003-2015
East Kapolei [2]		2003-2015
East Kapolei II [2]		2003-2015
Kaloi I (State Land Bank) [2]		N.D.
Kaloi II [2]		N.D.
Kaloi III [2]		N.D.
Kaloi IV [2]		N.D.
Site undetermined		N.D.
Intermediate/High School		
Kapolei Intermediate	X	1999 [3]
East Kapolei Intermediate [2]		N.D.
Kapolei High [2]	X	2000 [3]
East Kapolei High [2]		N.D.

NOTES:

[1] First Increment completed.

[2] No legislative appropriation as of 1995.

[3] Pending future appropriations.

N.D. Not Determined.

4.7.2 PLANNING PRINCIPLES

The following principles should be followed in planning and operating schools in Ewa:

- **Schools as Community Centers.** Because of the difficult financial problems for all sectors, new communities are likely to have fewer churches, private social halls, and recreation facilities. As a result, schools may have to assume important functions as cultural and recreational centers and as meeting facilities. The State DOE should design school facilities to facilitate community use during non-school hours and weekends.

- **Co-location with Parks.** Elementary and intermediate schools should be co-located with neighborhood or community parks, and designs of facilities should be coordinated by the State DOE and the Department of Parks and Recreation when needless duplication of parking and of athletic, recreation, and meeting facilities can be avoided.

- **Shared Facilities.** The Department of Parks and Recreation should coordinate the development and use of athletic facilities such as swimming pools and gymnasiums with the DOE where such facilities would maximize use and reduce duplication of function.

- **Fair Share Contribution.** The City will support the State Department of Education's request for fair share contributions from developers of residential projects to insure that adequate school facilities are in place at existing and new schools to meet the needs of residents.

4.8 PUBLIC SAFETY FACILITIES

Table 4.4 provides a listing of existing and planned fire and police stations in the Ewa Development Plan area.

TABLE 4.4: EXISTING AND PLANNED FIRE AND POLICE STATIONS IN THE EWA DEVELOPMENT PLAN AREA

Facilities	Site	Service Area	Service Date
Fire Stations			
Ewa Beach [1]	Ewa Beach	Ewa by Gentry, Ewa Marina, Ewa Beach, Iroquois Point	Existing
Makakilo	Makakilo	Makakilo, Ko Olina, Villages of Kapolei	Existing
Kapolei	Kapolei	Campbell Industrial Park, City of Kapolei, Kapolei Business Park	1995
Ewa Beach [2]	Fort Weaver Road	Ewa by Gentry, Ewa Marina, Ewa Beach, Iroquois Point	2000
Ewa Villages	Tenney Village	West Loch, Ewa Villages, East Kapolei	N.D.
Ko Olina	Ko Olina	Ko Olina Resort	N.D.
Makaiwa Hills	Makaiwa Hills	Makaiwa Hills	N.D.
Police Stations			
Ewa Plains Regional Station	City of Kapolei	Ewa Region	1997
Substations			
	Ewa Villages	East Ewa Region	N.D.
	Ko Olina	West Ewa Region	N.D.

NOTES:
[1] To be replaced with new station on Fort Weaver Road.
[2] New.
N.D. Not Determined.

To meet projected population and economic growth by 2020, the Fire Department estimates Ewa will need four new fire stations.

Because police operate primarily in the field and do not have a need for outlying stations, only a new regional station is projected by the Police Department to be needed to serve the 2020 population of 125,000. It is planned to be built in the City of Kapolei on donated land.

4.8.1 GENERAL POLICIES

Adequate staffing and facilities are needed to ensure public safety. New development should be approved only if staffing and facilities will be adequate to provide fire and police protection when development is completed.

4.9 OTHER COMMUNITY FACILITIES

Other existing and proposed community facilities shown on the Urban Land Use Map in Appendix A include hospitals, colleges, correctional facilities, and cemeteries. Key facilities include the planned University of Hawaii West Oahu campus and St. Francis West Hospital.

Location of new community facilities should comply with the following principles:

- **Colleges and Hospitals.** Colleges and hospitals should generally be located in urban areas near transit nodes, commercial centers, or high-density residential areas.

- **Correctional Facilities.** Correctional facilities should generally be located on industrial or agricultural lands. (However, a youth detention facility can be located within the City of Kapolei as part of a relocated Family Court.) If such a facility is proposed for lands not planned for industrial or agricultural use, a City review and approval process which provides public review, complete analysis, and policy approval should be used.

- **Other Major Facilities.** Major public, quasi-public or private facilities or utilities which provide essential community services but which could have a major adverse impact on surrounding land uses should be considered through a City review and approval process, such as the Plan Review Use process, which provides public notification, review by appropriate agencies, opportunities for public comment, and approval by the City Council.

4.10 ADDED OR CHANGED PUBLIC FACILITIES

Public facilities other than those listed in this plan shall be identified on the Public Infrastructure Map.

5. IMPLEMENTATION

Implementation of the Ewa Development Plan will be accomplished by:

- Phasing development to support the vision for Ewa and to maximize the effect of infrastructure investments;
- Guiding development in areas of critical concern including Kalaeloa (BPNAS) through Special Area Plans;
- Guiding public investment in infrastructure through Functional Plans which support the vision of the Development Plan;
- Recommending approval, approval with modifications or denial of developments seeking zoning and other development approvals based on how well they support the vision for Ewa's development;
- Incorporating Development Plan priorities through the Public Infrastructure Map and the City's annual budget process;
- Evaluating progress in fulfilling the vision of the Ewa Development Plan every two years and presenting the results of the evaluation in the Biennial Report; and
- Conducting a review of the vision, policies, principles, guidelines, and CIP priority investments of the Ewa Development Plan every five years and recommending revisions as necessary.

5.1 PHASING OF DEVELOPMENT

Phasing development provides the opportunity to focus the impact of scarce public funds for infrastructure development, supports the directed growth strategy of the General Plan, and provides a clear signal to private landowners and developers as to where and when development will be supported.

5.1.1 PHASING AREAS

Three types of areas are identified in the Phasing Map in Appendix A, indicating when zoning changes and infrastructure investment would be supported if the project advances the Development Plan vision for Ewa and implements the relevant policies, principles and guidelines:

- **Urban Expansion, 1997 - 2005** (high priority areas supported for zoning changes and infrastructure investments within the next eight years if the project supports the vision for Ewa and implements relevant policies, principles, and guidelines);
- **Urban Expansion, 2006 - 2015** (secondary priority areas supported for zoning changes and infrastructure investments after the next ten years if the project advances the vision for Ewa and implements relevant policies, principles, and guidelines); and
- **Urban Expansion, 2016 and Beyond** (projects in these areas will generally be supported for zoning changes and infrastructure investments if projects in the earlier phases have demonstrated substantial progress).

5.1.2 PUBLIC FACILITY INVESTMENT PRIORITIES

The regional directed growth strategy requires the cooperation of both public and private agencies in planning, financing, and constructing infrastructure. The City must take an active role in planning infrastructure and coordinating construction of needed infrastructure, such as expansion of Honouliuli Wastewater Treatment Plant and reuse of its effluent, development of drainage systems for the Kaloi Gulch and Kapolei watersheds, provision of recreational open spaces, and development of the regional transportation system, parks, and police and fire facilities.

Capital Improvement Projects shall be developed to support the development of High Priority Areas during the first eight years (1997 - 2005).

Significant Capital Improvement Projects of the highest priority for the Ewa Development Plan are:

- A dedicated Rapid Transit Corridor linking the City of Kapolei, Kapolei Village, the UH West Oahu Campus, and Waipahu;
- City Offices in the City of Kapolei;
- State Offices in the City of Kapolei;
- The University of Hawaii West Oahu campus in the vicinity of Pu'u Kapuai and north of the H-1 Freeway;
- The North-South Road and other elements of the Ewa Regional Highway Transportation Plan;
- Drainage Plans for Kaloi Gulch, Kapolei, and West Loch Watersheds;
- New potable and nonpotable water sources; and
- Expanded wastewater treatment plant capacity, and reclamation of effluent from the Honouliuli Wastewater Plant for nonpotable water uses.

5.1.3 DEVELOPMENT PRIORITIES

Applications for zoning and other regulatory approvals for developments which are consistent with the Development Plan vision and policies and are located in the High Priority Areas will be processed during the first eight years (1997 - 2005).

5.1.4 EXCEPTIONS TO DEVELOPMENT PRIORITIES

Support for development of a project in a Secondary Priority Area could be appropriate during the first eight years (1997 - 2005) only if:

- The vision for economic development in Ewa would be significantly advanced by development of the project;
- Affordable housing needs or job creation objectives would not otherwise be met;
- Development of higher priority areas has been delayed; and

- Infrastructure cost considerations support development of the project before projects in higher priority areas.

5.2 SPECIAL AREA PLANS

Special Area Plans provide more detailed policies, principles, and guidelines than the Development Plan for areas requiring particular attention. The form and content of Special Area Plans depends on what characteristics and issues need to be addressed in greater detail in planning and guiding development or use of the Special Area.

Special Area Plans can be used to guide land use development and infrastructure investment in Special Districts, Redevelopment Districts, or Resource Areas. Plans for Special Districts would provide guidance for development and infrastructure investment in areas with distinct historic or design character or significant public views. Plans for Redevelopment Districts would provide strategies for the revitalization or redevelopment of an area. Plans for Resource Areas would provide resource management strategies for areas with particular natural or cultural resource values.

Barbers Point Naval Air Station (BPNAS) is the only area in Ewa identified for Special Area Plan status. Its Special Area Plan will be a combination of a Redevelopment District and Resource Area Plan. A Local Reuse Master Plan is being prepared by the Barbers Point Redevelopment Commission under guidelines of the Federal **Base Closure Act**. BPNAS is anticipated to be returned to civilian use by 1999. The Local Reuse Master Plan is intended to become the Special Area Plan. Land use and infrastructure policies, principles, and guidelines and other relevant sections from the BPNAS Special Area Plan should be submitted to the Planning Commission for public review and to the City Council for its consideration for adoption.

5.3 FUNCTIONAL PLANS

Functional Plans are meant to provide guiding principles and strategies which will be used by the various functional agencies to determine needs, assign priorities, phase infrastructure and facilities development, and secure financing to meet the needs identified in the Development Plan.

City agencies responsible for developing infrastructure and public facilities shall review existing Functional Plans, and in consultation with the Chief Planning Officer, update the existing Plans or prepare and submit to the Mayor new long-range Functional Plans for providing facilities and services for Ewa to the year 2020.

Agencies with Functional Planning responsibilities would include:

- Department of Design and Construction
- Department of Environmental Services
- Fire Department
- Department of Parks and Recreation
- Police Department
- Department of Transportation Services
- Board of Water Supply

The Functional Plans should provide:

- A Resource-constrained Long-Range Capital Improvement Program with priorities,
- A Long-Range Financing Plan, with any necessary new revenue measures,

- A Development Schedule with first priority to areas designated for earliest development, and
- Service and facility design standards, including Level of Service Guidelines for determining adequacy.

A resource-constrained program is one which identifies the fiscal resources that can be reasonably expected to be available to finance the improvements.

Level of Service Guidelines for determining adequacy of public facilities and infrastructure to support new development shall be established by the responsible City line agencies as part of their review and update of Functional Plans. Level of Service Guidelines for infrastructure and utilities which are primary State agency responsibilities (such as schools) shall be established by the Department of Planning and Permitting in consultation with the responsible State agencies.

In preparing the Functional Plans, a proactive public involvement process should be established which provides the public with access to complete information about infrastructure and public facility needs assessment, alternatives evaluation, and financing. Outreach activities should involve the Neighborhood Boards, community organizations, landowners, and others who might be significantly affected by the infrastructure or public facilities projects to be developed under the Functional Plan.

The process should be characterized by opportunities for early and continuing involvement, timely public notice, public access to information needed to evaluate the decision, and the opportunity to suggest alternatives and to express preferences.

5.4 REVIEW OF ZONING AND OTHER DEVELOPMENT APPLICATIONS

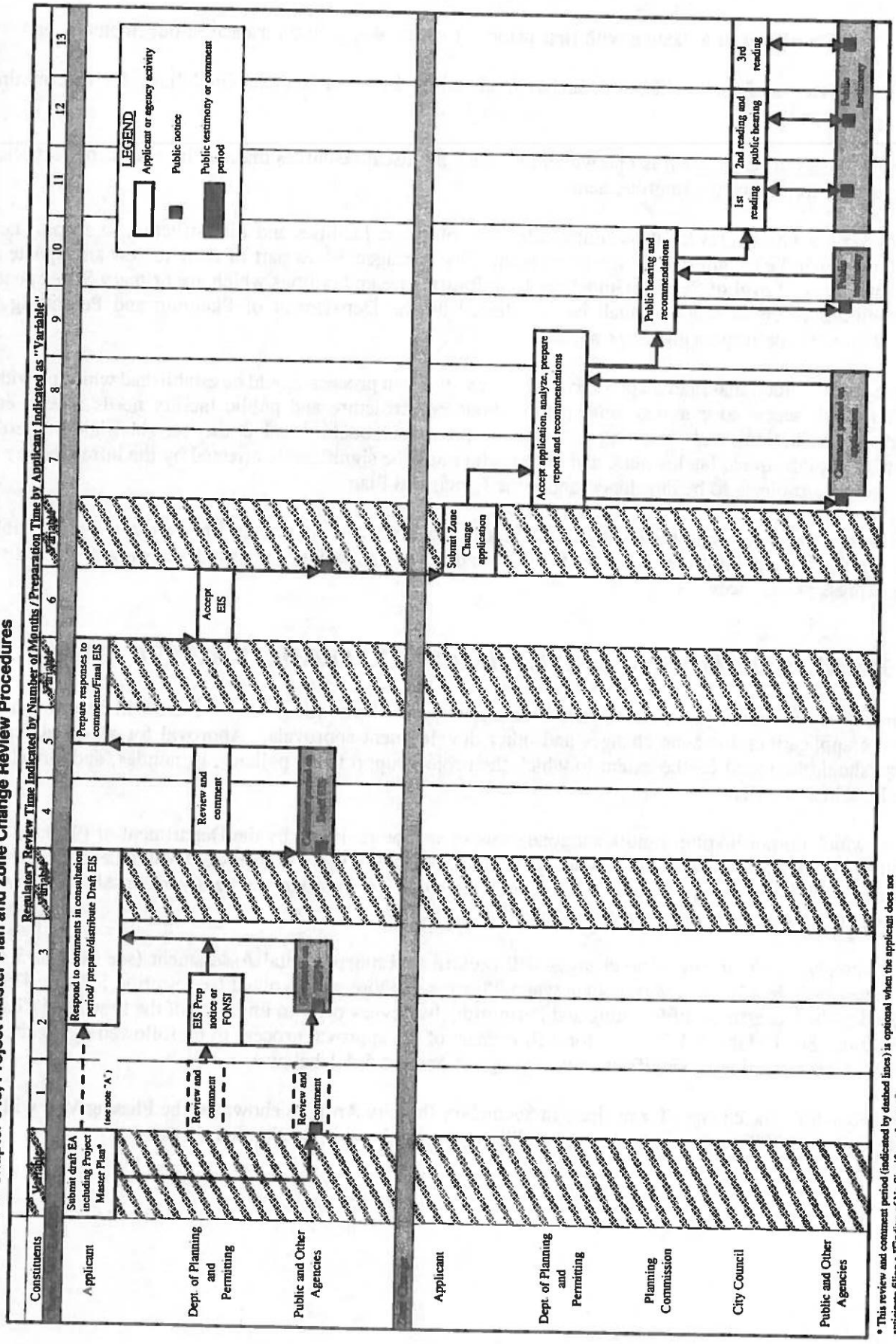
A primary way in which the vision of the Ewa Development Plan will guide land use will be through the review of applications for zone changes and other development approvals. Approval for all development projects should be based on the extent to which the project supports the policies, principles, and guidelines of the Development Plan.

Projects which do not involve significant zone changes will be reviewed by the Department of Planning and Permitting for consistency with the policies, principles, and guidelines of the Ewa Development Plan during the Zone Change Application process. Those projects requiring environmental assessments shall follow the provisions of Hawaii Revised Statutes, Chapter 343.

Projects involving significant zone changes will require an Environmental Assessment (see Section 5.4.1) which must include a Project Master Plan when 25 acres or more are involved (see Section 5.4.2). This is submitted to the Department of Planning and Permitting for review prior to initiation of the first Zone Change Application. See Exhibit 5.1 Revised for a flow chart of the approval process to be followed by significant projects. (See definition of significant zone change in Section 5.4.1 below.)

Applications for zone changes for projects in Secondary Priority Areas as shown on the Phasing Map will not be accepted until 2003 unless extenuating conditions (noted above in Section 5.1.4) exist.

Exhibit 5.1, Revised
Coordination of Chapter 343, Project Master Plan and Zone Change Review Procedures



* This review and comment period (indicated by dashed lines) is optional when the applicant does not anticipate filing a "Finding of No Significant Impact."

A: For projects greater than 25 acres.

5.4.1 ENVIRONMENTAL ASSESSMENT

Projects involving a significant zone change will be required to submit an Environmental Assessment (prepared in compliance with procedures for Chapter 343, Hawaii Revised Statutes) to the Department of Planning and Permitting to help the Department determine whether the project involves a significant environmental effect and if the project is supportive of the vision for Ewa's development.

A project will be considered to involve a significant zone change if:

- The application involves a zone change of 25 acres or more to any zoning district or combination of zoning districts, excluding preservation and agricultural zoning districts; or
- The project is more than 10 acres and involves a change from one zoning district to a Residential, or Country zoning district; or
- The project is more than 5 acres and involves a change from one zoning district to an Apartment, Resort, Commercial, Industrial, or Mixed Use zoning district; or
- The project would have major social, environmental, or policy impacts, or cumulative impacts due to a series of applications in the same area.

Zoning district categories, zoning district titles, and associated zoning map designations in effect as of February 1996 are shown below in Table 5.1.

The Director of the Department of Planning and Permitting will determine, based on review of the environmental assessment, whether an Environmental Impact Statement (prepared in compliance with procedures for Chapter 343, Hawaii Revised Statutes) will be required or whether a Finding of No Significant Impact should be issued.

TABLE 5.1: ZONING DISTRICT CATEGORIES

ZONING DISTRICT CATEGORY	ZONING DISTRICT TITLE	MAP DESIGNATION
Preservation	Restricted Military and Federal General	P-1 F-1 P-2
Agricultural	Restricted General	AG-1 AG-2
Country	Country	C
Residential	R-20 R-10 R-7.5 R-5 R-3.5	R-20 R-10 R-7.5 R-5 R-3.5
Apartment	Low-Density Medium-Density High-Density	A-1 A-2 A-3
Apartment Mixed Use	Low-Density Medium-Density High-Density	AMX-1 AMX-2 AMX-3
Resort	Resort	Resort
Business	Neighborhood Community	B-1 B-2
Business Mixed Use	Community Central	BMX-3 BMX-4
Industrial	Limited Intensive Waterfront	I-1 I-2 I-3
Industrial - Commercial Mixed Use	Industrial - Commercial Mixed Use	IMX-1

SOURCE: **Land Use Ordinance.** Department of Land Utilization, City and County of Honolulu. February 1996.

In applying for a zoning change, the applicant must either:

- Receive a determination from the Director of Planning and Permitting that the project does not involve a significant zone change, or
- Submit an Environmental Assessment which will include a Project Master Plan when required, with the zone change application.

Before an application for a significant zone change can be initiated by the Department of Planning and Permitting, the applicant must either:

- Receive a Finding of No Significant Impact from the Director of Planning and Permitting, or
- Receive an acceptance of a Final Environmental Impact Statement for the project from the Department of Planning and Permitting.

All Environmental Assessments/Environmental Impact Statements required for a significant zone change involving 25 acres or more shall include a Project Master Plan (see Section 5.4.2 below). The scope of the EA/EIS must cover at a minimum the specific development associated with a particular zone change application, but at the option of the applicant may cover subsequent phases of a larger project, as well.

Zone change applications for a project already assessed under the National Environmental Policy Act, Hawaii Revised Statutes Chapter 343, Revised Ordinances of Honolulu Chapter 25 (Shoreline Management), or a preceding zoning change application will not require a new Environmental Assessment so long as the Director of Land Utilization determines that the desired zoning and land use generally conform to that described in the existing Environmental Assessment/Environmental Impact Statement.

5.4.2 PROJECT MASTER PLANS

The Project Master Plan is intended solely as a guide to help describe in words and illustrations how a project promotes the vision, policies, principles and guidelines for Ewa.

Projects associated with a significant zone change which involve 25 acres or more shall include a Project Master Plan to the Department of Planning and Permitting. The Project Master Plan shall cover all project phases. It shall be reviewed to determine whether the project supports the vision, policies, principles, and guidelines of the Ewa Development Plan. In the event a Final EIS has already been accepted by the City for a particular project, then a subsequent Project Master Plan will not be required.

The Project Master Plan should be based on the best information available to the applicant at the time the Zone Change Application is submitted to the City.

5.4.2.1 Coverage and Scope

The Project Master Plan should cover all phases of the project and should describe, using narrative and graphic illustration, how the project conforms to the vision for Ewa, and the relevant policies, principles, and guidelines for the project site, the surrounding lands, and the region.

5.4.2.2 Key Elements

While the scope and detail will vary according to the scope and complexity of the project, the Project Master Plan should contain the following elements. When a key element enumerated below is adequately addressed elsewhere in an EA/EIS, discussion of related issues should be referenced within the Master Plan portion of the document.

- **Statement of Consistency with the Ewa Development Plan Vision.** The Master Plan should indicate how the project supports the vision, policies, principles, and guidelines of the Ewa Development Plan.

- **Site Analysis.** The Master Plan should identify how the proposed development physically relates to prominent existing site features, views identified in Table 3.1 and on the Open Space Map in Appendix A, and surrounding urban or urbanizing areas and should describe any related opportunities and constraints.

- **Land Use.** The Master Plan should indicate the proposed pattern of land uses by general zoning district category. General zoning district categories from the Land Use Ordinance as of February 1996 are shown above in Table 5.1.

  Land uses proposed for lands in any future development phases which are not included in the current Zone Change Application will be considered only conceptual and intended to serve only as a working guide for future development.

  In larger projects, residential neighborhoods should be designated, and concepts intended to create a sense of neighborhood should be described.

  For projects which involve multiple uses, the intended relationship between zoning districts should be described.

- **Open Space.** The Master Plan should discuss open space as a component of the overall land use element, and should indicate how the proposed development promotes the Development Plan open space principles and guidelines and the vision of an integrated regional open space system.

- **Circulation.** The Master Plan should indicate general street patterns and intended connections to the regional roadway network, and intended transit routes and pedestrian and bicycle routes.

- **Design Theme or Character.** The Master Plan should depict, with sketches, photos or descriptions, the intended general urban design of the area. These vignettes should be represented and understood to be conceptual depictions of the intended general design theme of the project.

- **Telecommunications.** The Master Plan should indicate the sites and network conduit facilities that would be provided to meet expected telecommunications infrastructure needs, if applicable.

5.4.2.3 Review Procedures

The Department of Planning and Permitting shall review the Project Master Plan concurrently with the Environmental Assessment/Environmental Impact Statement as shown in Exhibit 5.1 Revised, and shall determine whether the Project Master Plan supports the Ewa Development Plan vision or request changes.

5.4.2.4 Modification of Master Plan for Future Phases

Often, projects are developed in phases. As a result, the Project Master Plan is likely to cover more land than the developer is currently requesting for a zone change. The feasibility and desirability of plans for later phases of the Project Master Plan can be greatly altered in light of more detailed study of site characteristics and site planning, or change in market forces or government policies.

As a result, elements of the Master Plan covering lands in phases which are not included in the current Zone Change Application should be considered only conceptual and intended to serve only as a working guide for future development. Changes to these parts of the Master Plan can be made by the developer at any time without requiring approval by the City.

If the Master Plan has been revised in planning for a subsequent phase of the project, an updated version of the Master Plan should be submitted with the zone change application for that phase. No new Environmental Assessment or Master Plan review should be required unless there has been a major alteration in the project vision and land uses from that proposed in the original Master Plan.

5.4.3 ADEQUATE FACILITIES REQUIREMENT

All projects requesting zone changes shall be reviewed to determine if adequate public facilities and infrastructure will be available to meet the needs created as a result of the development. Level of Service Guidelines to define adequate public facilities and infrastructure requirements will be established during the Capital Improvement Program.

In order to guide development and growth in an orderly manner as required by the City's General Plan, zoning and other development approvals for new developments should be approved only if the responsible City and State agencies indicate that adequate public facilities and utilities will be available at the time of occupancy or if conditions the functional agency indicates are necessary to assure adequacy are otherwise sufficiently addressed.

The Department of Planning and Permitting will review and summarize any individual agency's findings regarding public facilities and utilities adequacy which are raised as part of the EA/EIS process. The Department of Planning and Permitting will address these findings and any additional agency comments submitted as part of the agency review of the zone change application and recommend conditions that should be included in the Unilateral Agreement or Development Agreement to insure adequacy of facilities.

5.4.4 ZONING APPLICATION REVIEW

Zoning applications which do not involve a significant zone change will be reviewed by the Department of Planning and Permitting for consistency with the General Plan, the Ewa Development Plan, and any applicable Special Area Plan provisions as part of the Zone Change application review.

The Director of Planning and Permitting will recommend either approval, approval with changes, or denial within the prescribed period as set forth in ROH Section 21-2.70, and the Director's written review of the application shall address the consistency or inconsistency of the project with the General Plan, the Ewa Development Plan and shall become part of the zone change report which will be sent to the Planning Commission and the City Council.

5.4.5 UNILATERAL AGREEMENTS

Before the enactment of an ordinance for a zone change, conditions may be imposed on the applicant's use of the property. These conditions are set forth in the applicant's Unilateral Agreement which is recorded with

the Bureau of Conveyances and/or the Land Court so that the conditions set forth in the agreement run with the land and bind all subsequent owners of the property.

The Director of Planning and Permitting proposes conditions initially in a report to the Planning Commission which evaluates the requested zone change and recommends approval. The Director of Planning and Permitting will evaluate the proposed project for consistency with the Ewa Development Plan vision and recommend conditions to insure that the project supports the Development Plan policies, principles, and guidelines. In addition, Project Master Plans submitted for large projects at the time of the zone change application should be referenced as a working guide in the Unilateral Agreement.

5.4.6 DEVELOPMENT AGREEMENTS

Before the enactment of an ordinance for a zone change, the City and the applicant may negotiate a Development Agreement with the applicant. The Development Agreement sets forth mutually acceptable contractual conditions agreed upon by the City and the applicant at the time of the adoption of an ordinance for a zoning change. The Development Agreement conditions are recorded with the Bureau of Conveyances and/or the Land Court so that the conditions of the agreement run with the land and bind all subsequent owners of the property.

Development agreements negotiated by the City Council shall be consistent with the Development Plan vision for Ewa and may incorporate key conditions which are necessary to implement the Development Plan vision.

5.5 ANNUAL CIP REVIEW

Annually, the Director of Planning and Permitting will work jointly with the Director of Budget and Fiscal Services and the City agencies to review all projects in the City's Capital Improvement Program (CIP) budget for conformance to the purposes of the General Plan, the Ewa Development Plan, and other Development Plans, any applicable Special Area Plan provisions, and the appropriate Functional Plans. The Director of Planning and Permitting will make a written report of findings in the budget submittal to the Council, pursuant to Revised Charter Section 6-903.

Public review of how projects in the City's CIP budget help accomplish the vision of the Ewa Development Plan should be a high priority. Public review should be encouraged both in the screening of agency CIP budget proposals in the preliminary draft CIP Budget (which is available in November), in review of projects included in the Draft CIP Budget (typically completed sometime in January or February), and in the City Council's formal public review and CIP Budget adoption processes.

5.6 BIENNIAL REPORT

Every two years, the Department of Planning and Permitting prepares the **Biennial Report**. The **Report** is a review of the City in terms of the General Plan and the Development Plans.

Each **Biennial Report** should address the achievements and progress in fulfilling the vision of the Ewa Development Plan.

5.7 FIVE-YEAR DEVELOPMENT PLAN REVIEW

The Department of Planning and Permitting shall conduct a comprehensive review of the Ewa Development Plan and shall report its findings and recommended revisions to the Planning Commission and the City Council five years after adoption and every five years thereafter.

In the Five Year review, the Ewa Development Plan will be evaluated to see if the regional vision, policies, principles, guidelines, and implementing actions are still appropriate. In addition, the development phasing guidelines will be reviewed to see if its purpose is being achieved and if phasing priorities should be revised.

5.8 TRANSITION FROM THE CURRENT SYSTEM

This section discusses the transition from the former Development Plan to this revised Development Plan, including its independence from Development Plan Common Provisions, its relationship to the General Plan guidelines, and the need for review and revision of development codes, standards, and regulations.

5.8.1 DEVELOPMENT PLAN COMMON PROVISIONS AND EXISTING LAND USE APPROVALS

This Development Plan will go into effect upon adoption by ordinance. At that time, the revised Development Plan will become a self-contained document, not reliant on the Development Plan Common Provisions which formerly applied to the Ewa Development Plan as well as all the other Development Plans.

Land use approvals granted under previously approved Development Plan amendments will remain in force and guide zoning decisions unless clearly inconsistent with the vision and policies of the Ewa Development Plan. Development can proceed in accordance with existing zoning, Unilateral Agreements, and approved Urban Design Plans. If an Environmental Assessment or Environmental Impact Statement (EA/EIS) was accepted in the course of a Development Plan land use approval for a project, it should be acceptable to meet the requirement for an initial project EA/EIS when zone change applications are submitted for subsequent phases of the project unless the project scope and land uses are being significantly changed from that described in the initial EA/EIS.

5.8.2 RELATION TO GENERAL PLAN POPULATION GUIDELINES

The Ewa Development Plan implements the **General Plan** population policies (in Population Objective C) as follows:

- Ewa's share of Oahu population in 2010 will be below the current **General Plan** population distribution range, but is expected to move closer to the range by 2020.
- Development will be encouraged within the secondary urban center at Kapolei and the urban fringe areas in Ewa.
- The recommended land use pattern also implements Population Objective C, Policy 3, which is to limit growth in areas outside the PUC, Central Oahu, and Ewa so that the suburban and country character of these outlying areas can be maintained.

The General Plan population distribution guidelines will continue to be used as a guide to direct the pattern of growth and development in the Ewa Development Plan Area. Assessments of this performance will be reported in both the **Biennial Report** and in the Three Year Review of the Development Plan.

Under the new Ewa Development Plan, projects will be evaluated against how well they fulfill the vision for Ewa set forth in the Development Plan and how closely they meet the policies, principles, and guidelines selected to implement that vision.

5.8.3 REVIEW AND REVISION OF DEVELOPMENT CODES

Upon completion of the Development Plan Revision Program, current regulatory codes and standards should be reviewed and revised, as necessary, to maintain their consistency and effectiveness as standards to guide attainment of the objectives and policies envisioned for all Development Plan areas. To achieve the vision for Ewa as identified in this plan, at the time such reviews are conducted, the following regulatory codes and standards may warrant further review and revision to ensure achievement of the vision for the Ewa region, as well as consistency with the Ewa Development Plan:

- **Land Use Ordinance** (Chapter 21, Revised Ordinances of Honolulu). Zoning code standards and the zoning map for Ewa need to be revised to reflect policies, principles and guidelines in the Development Plan.

- **Subdivision Rules and Regulations** (Department of Land Utilization, pursuant to Chapter 22, Revised Ordinances of Honolulu). Public right-of-way standards used for subdivision and consolidation of land need to be revised to reflect transportation policies, principles, and guidelines in the Development Plan.

- **Traffic Standard Manual** (Department of Transportation Services, July 1976, as revised). Standards which are applied to local and most collector streets need to be revised to reflect transportation policies, principles, and guidelines in the Development Plan.

- **State Highways Division Procedures Manual,** Vol. 8, Chapter 5, Section 4 (State Department of Transportation). These State highway standards need to be reviewed to identify provisions which may conflict with the transportation policies, principles, and guidelines in the Development Plan.

- **Standard Details for Public Works Construction** (Honolulu Department of Public Works with Kauai, Maui, and Hawaii County Departments of Public Works, September 1984). Engineering standards for the dedication of public works construction need to be revised to reflect Development Plan principles and guidelines.

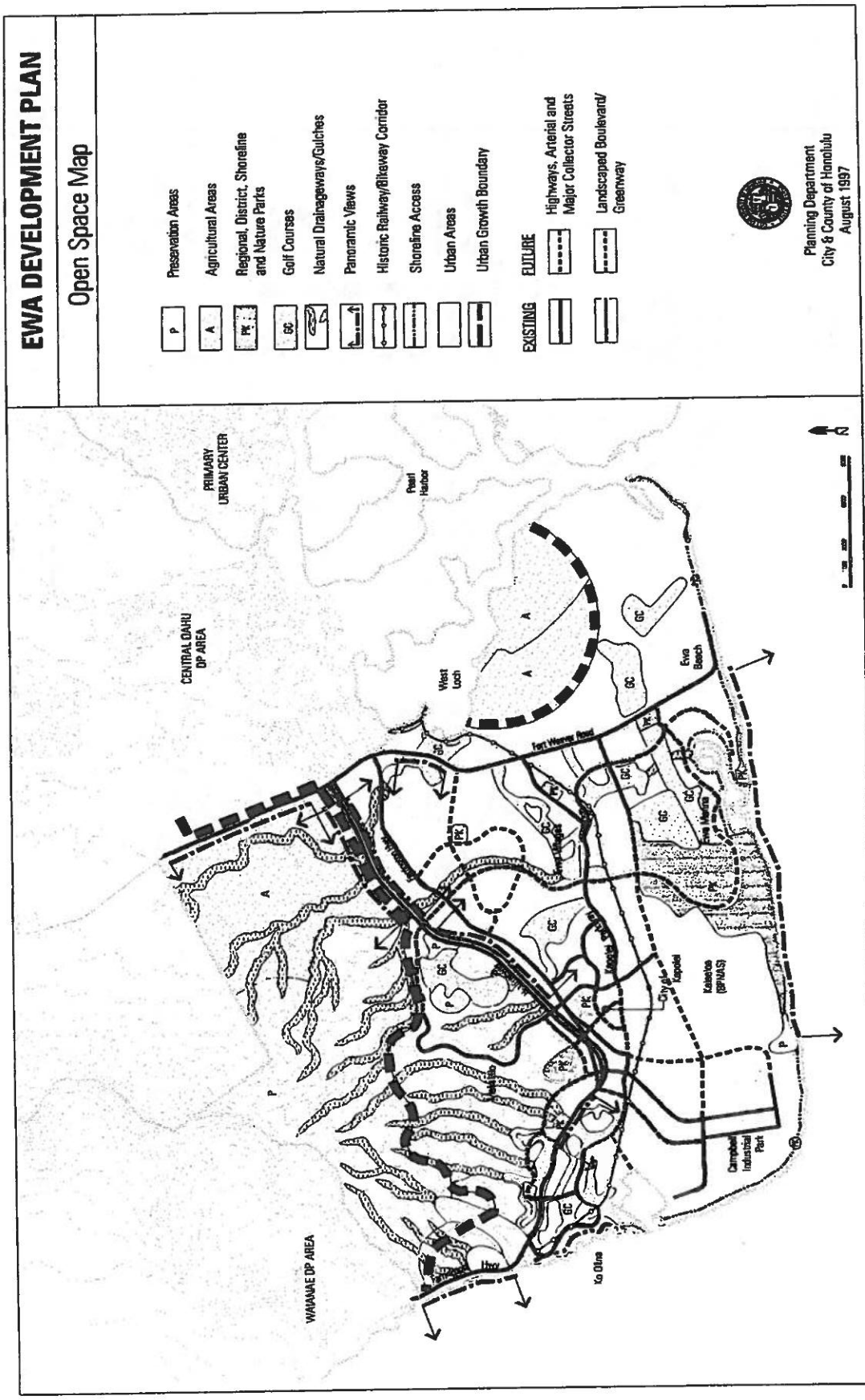
- **Storm Drainage Standards** (Department of Public Works, March 1986). Standards for the dedication of drainage systems to incorporate grassed swales and retention basins into the design need to be created to reflect the Development Plan policies, principles, and guidelines for open space.

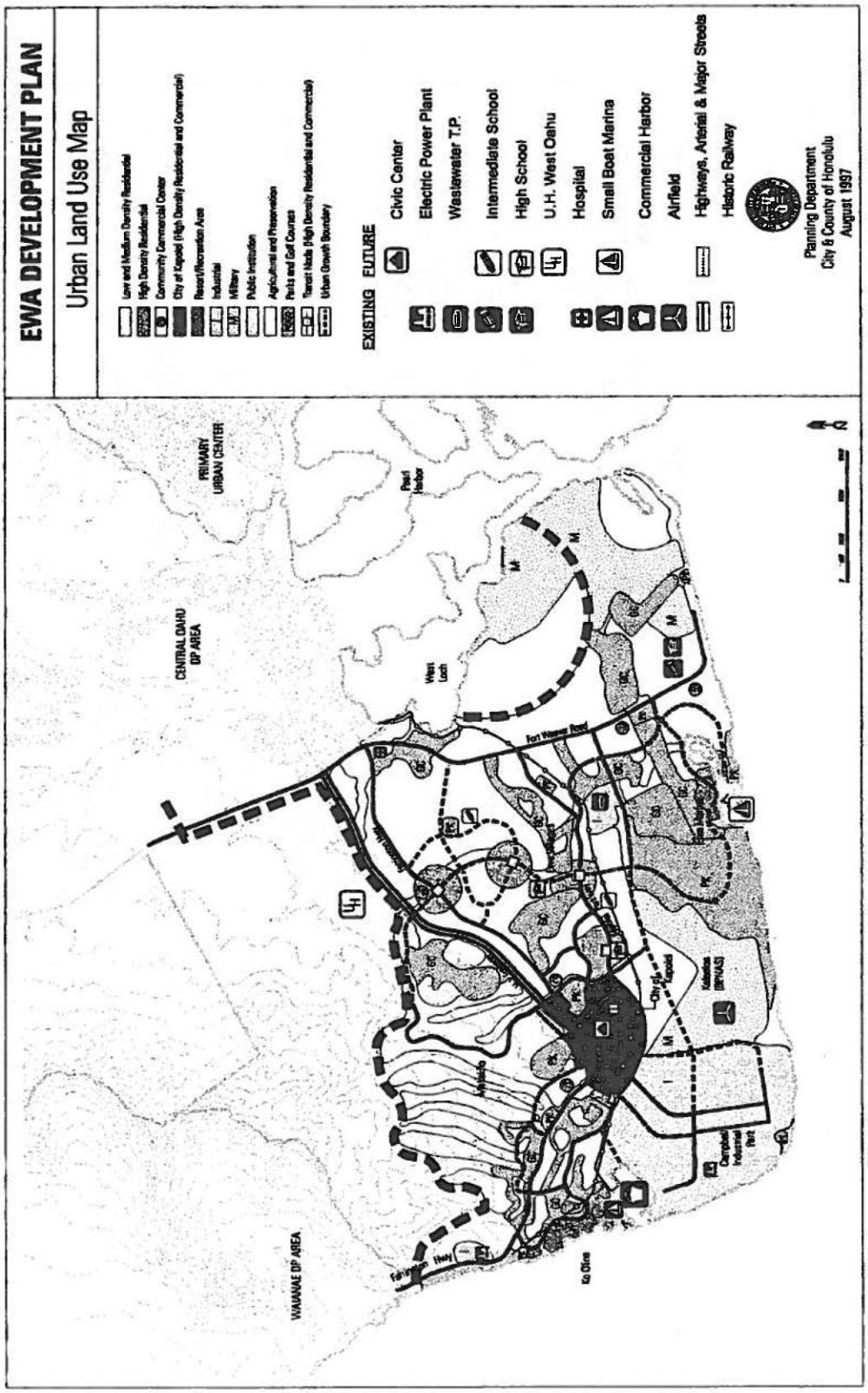
- **Park Dedication Rules and Regulations** (Department of Land Utilization, pursuant to Chapter 22, Article 7, Revised Ordinances of Honolulu). Regulations need to be reviewed to determine if passive drainage systems which are designed for recreation use should count toward park dedication requirements, especially in cases where the area would exceed the amount of land that would be required under current rules and regulations.

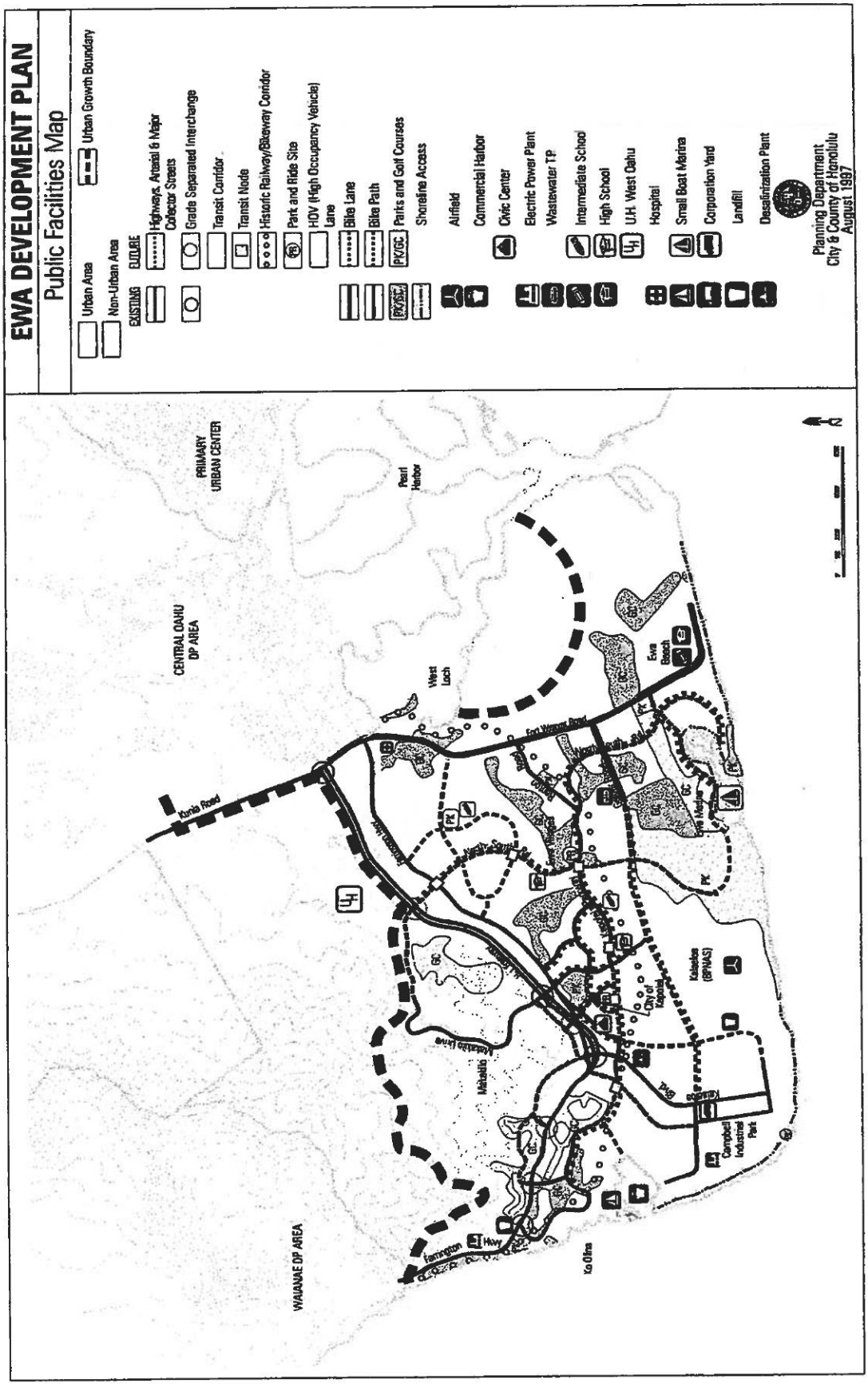
- **Wastewater Management Design Standards** (Department of Wastewater Management Design Standards, Volumes I and II) and the 1990 Revised Ordinances of Honolulu, Chapter 14 (relating to sewer services). These standards and ordinances may require review to further implement Development Plan policies and guidelines.

APPENDIX A: CONCEPTUAL MAPS

This appendix includes the four primary conceptual maps used to illustrate the vision for Ewa's future development. The maps include:


EWA DEVELOPMENT PLAN
Open Space Map
Preservation Areas
Agricultural Areas
Regional, District, Shoreline and Nature Parks
Golf Courses
Natural Drainageways/Gulches
Panoramic Views
Historic Railway/Bikeway Corridor
Shoreline Access
Urban Areas
Urban Growth Boundary
FUTURE
Highways, Arterial and Major Collector Streets
Landscaped Boulevard/ Greenway
EXISTING
Planning Department
City & County of Honolulu
August 1997
PRIMARY URBAN CENTER
CENTRAL OAHU DP AREA
WAIANAE DP AREA
Pearl Harbor
West Loch
Fort Weaver Road
Ewa Beach
Ewa Marina
Kapolei
Kalaeloa (BPNAS)
Campbell Industrial Park
Ko Olina


EWA DEVELOPMENT PLAN
Urban Land Use Map
Low and Medium Density Residential
High Density Residential
Community Commercial Center
City of Kapolei (High Density Residential and Commercial)
Resort/Recreation Area
Industrial
Military
Public Institution
Agricultural and Preservation
Parks and Golf Courses
Town Node (High Density Residential and Commercial)
Urban Growth Boundary
EXISTING FUTURE
Civic Center
Electric Power Plant
Wastewater T.P.
Intermediate School
High School
U.H. West Oahu
Hospital
Small Boat Marina
Commercial Harbor
Airfield
Highways, Arterial & Major Streets
Historic Railway
Planning Department
City & County of Honolulu
August 1997
PRIMARY URBAN CENTER
CENTRAL OAHU DP AREA
WAIANAE DP AREA
Pearl Harbor
West Loch
Fort Weaver Road
Kapolei
Makakilo
Kalaeloa (BRAC)
Campbell Industrial Park
To Ewa
N


EWA DEVELOPMENT PLAN
Public Facilities Map
Urban Area
Non-Urban Area
Urban Growth Boundary
EXISTING
FUTURE
Highways, Arterial & Major Collector Streets
Grade Separated Interchange
Transit Corridor
Transit Node
Historic Railway/Bikeway Corridor
Park and Ride Site
HOV (High Occupancy Vehicle) Lane
Bike Lane
Bike Path
Parks and Golf Courses
Shoreline Access
Airfield
Commercial Harbor
Civic Center
Electric Power Plant
Wastewater TP
Intermediate School
High School
U.H. West Oahu
Hospital
Small Boat Marina
Corporation Yard
Landfill
Desalinization Plant
Planning Department
City & County of Honolulu
August 1997
PRIMARY URBAN CENTER
CENTRAL OAHU DP AREA
WAIANAE DP AREA
Pearl Harbor
West Loch
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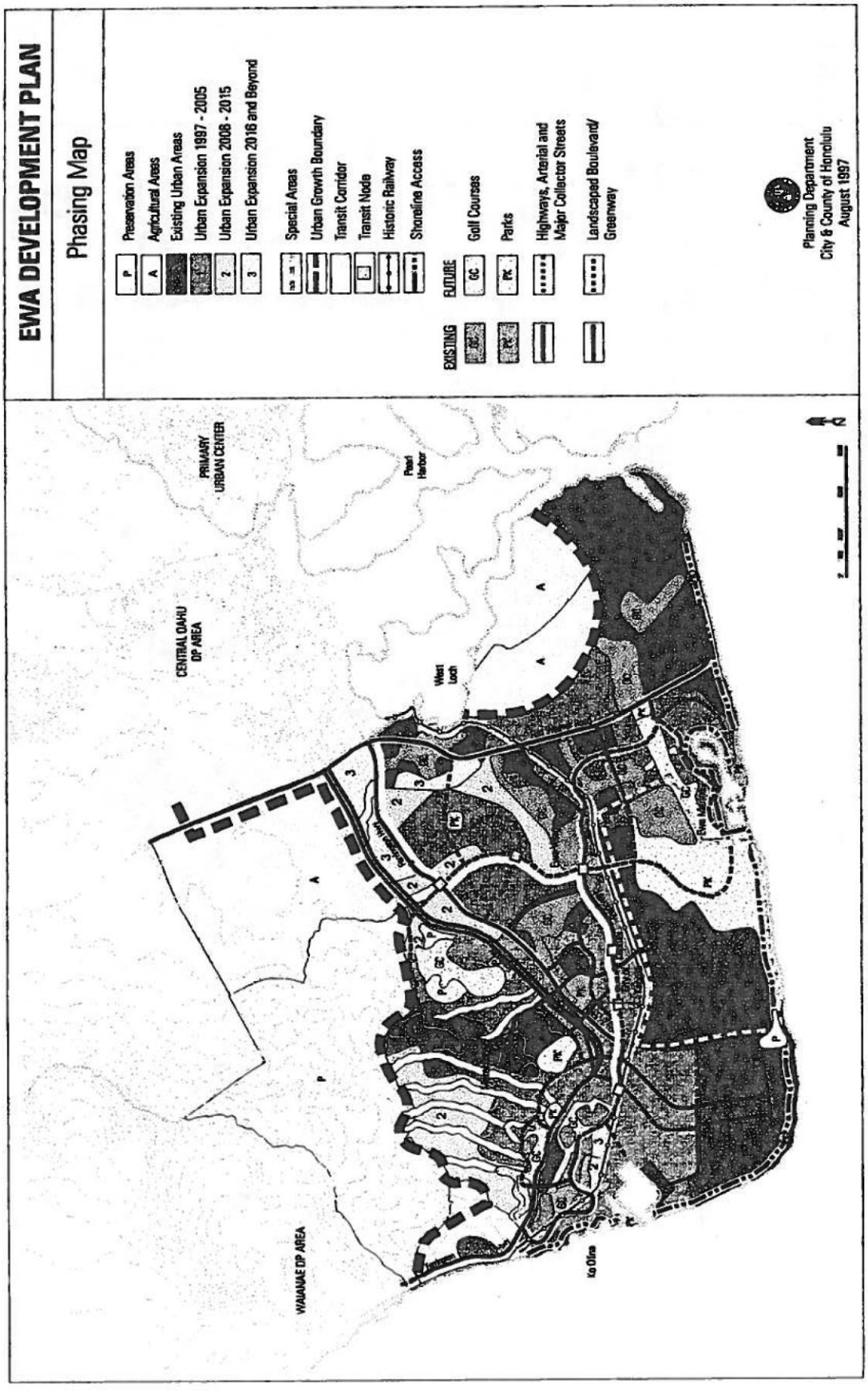
Ewa Beach
Ewa Marina
Kalaeloa (BPNAS)
Campbell Industrial Park
Farrington Hwy
Kapolei Parkway
Makakilo
Ko Olina
N


EWA DEVELOPMENT PLAN
Phasing Map
P Preservation Areas
A Agricultural Areas
Existing Urban Areas
Urban Expansion 1997 - 2005
2 Urban Expansion 2006 - 2015
3 Urban Expansion 2016 and Beyond
Special Areas
Urban Growth Boundary
Transit Corridor
Transit Node
Historic Railway
Shoreline Access
EXISTING
FUTURE
GC Golf Courses
PK Parks
Highways, Arterial and Major Collector Streets
Landscaped Boulevard/ Greenway
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